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THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

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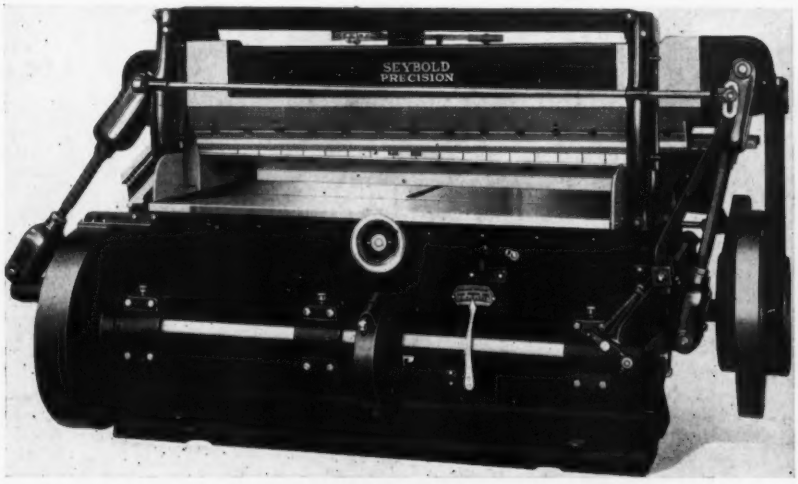

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JULY
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Vol. CVI
No. 2

DOWNINGTOWN

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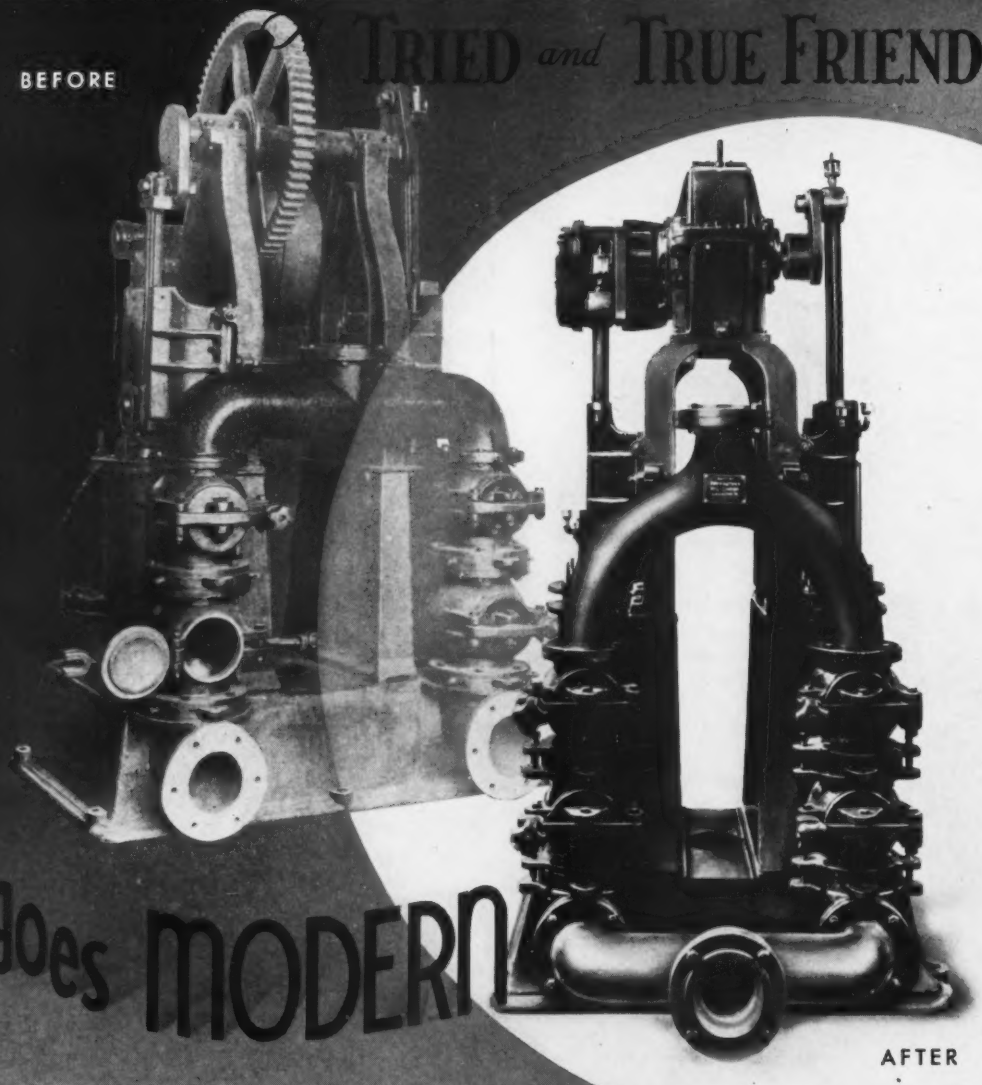
BEFORE



AFTER

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Entered as second class matter at the Post Office at East Stroudsburg, Pa., under the Act of Congress of March 3, 1879. Published every Thursday by the Lockwood Trade Journal Co., at 34 N. Crystal St., East Stroudsburg,Pa. Executive and Editorial office: 15 W. 47th St., New York, N. Y. Domestic subscription U. S. and possessions, $4.00 per year.

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Published Every Thursday by the LOCKWOOD TRADE JOURNAL CO., Inc.

Executive and Editorial Offices: 15 West 47th Street, N. Y. C.
Western Rep.—H. K. Vinton, 123 W. Madison St., Chicago, Ill.

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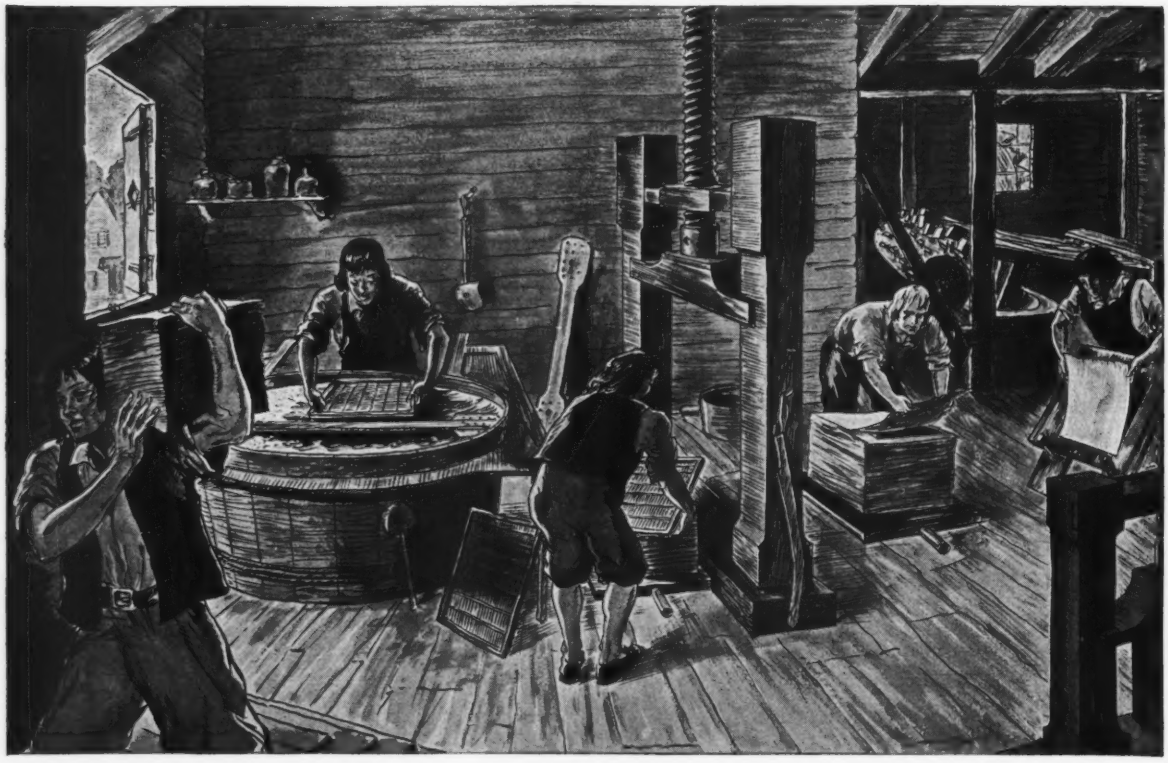

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The first paper mill in this country was built in 1690 at Germantown, Pa. resulting from the needs of the Philadelphia printer William Bradford and the arrival of the German paper maker, William Rittenhouse. In paper making, soda ash and caustic soda have long played a prominent part. Bleaching thru the use of liquid chlorine, another alkali product, is largely responsible for the tremendous revolutionary advance in the use of wood pulp for paper manufacture.

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PAPER — SIXTY-SEVENTH YEAR — PAPER

Established Feb. 17, 1899
Consolidated Nov. 16, 1899
with Paper Trade Journal.

Vol. CVII, No. 2 | Thursday, July 14, 1938

Established Sept. 21, 1918
Consolidated Feb. 19, 1925
with Paper Trade Journal.

Wisconsin Leadership in Industry Menaced

Report Issued by Milwaukee Division of American Chemical Society States Trend of Paper Industry to Southern States Necessitates State Provide For Future Supply of Pulp Wood — Other Late Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., July 11, 1938—Production of paper in Wisconsin totalled 950,000 tons last year, valued at $87,000,000, an increase of 20 per cent over the previous year, according to a report issued by the Milwaukee section of the American Chemical Society.

The trend of the industry is toward the south, the report said, because of the rapid depletion of the available supply of cheap wood. Unless Wisconsin soon makes provision for growing future supplies of the necessary woods, the state will lose its leadership in the industry, where it now ranks second, with New York first.

"There is still a considerable tonnage of the coarser grades of kraft paper produced in Wisconsin," the chemists said, "despite the tendency of this branch of the industry to migrate to the south. Newsprint production is practically non-existent, while more than 25 per cent of the better grades of writing paper is made in and around Appleton, Wis. Production of tissue and coated papers and specially processed packing, insulating and absorbing papers is still retained by the state."

Mills Operating Over 70 Per Cent

Newspaper reports on a survey of industry in Wisconsin give Kimberly-Clark Corporation, Neenah, Wis., and the Marathon Paper Mills Company, Rothschild, Wis., credit for operating far above the national average of 70 per cent for the paper industry of the United States. Kimberly-Clark is reported to be averaging between 88 and 90 per cent, and the Marathon mills at approximately 85 per cent. These mills operate heavily in the specialty fields, and noticed improvement in June business over the preceding month.

To Appraise Site for New Power Plant

Three appraisers have been selected by Judge D. E. McDonald, of the Winnebago County Court at Oshkosh, Wis., to determine the value of land owned by the Menasha Wooden Ware Corporation which the City of Menasha, Wis., desires to purchase as the site of a power substation. They are George Pierce, N. F. Verbrick and C. A. Loescher. The city's municipally operated utility has entered into a contract with the Wisconsin Michigan Power Company to purchase current at wholesale in lieu of building a steam generating plant for the furnishing of power to some of the paper mills in that section. Suit was brought by the city when it failed to obtain what is considered a reasonable price.

Unemployment Benefits Distributed

Unemployment benefits distributed throughout Wisconsin by the Wisconsin Industrial Commission during the first half of 1938 totalled $5,232,220. There were nearly 125,000 new claims for total unemployment payments. June allotments of $802,955 were made to approximately 32,000 persons. At the end of June, Wisconsin had paid out nearly $7,500,000 since the new law went into effect, and had a reserve fund of more than $33,500,000 available for future payments. At the end of June, 29,000 persons were currently applying for benefits, 15,000 of whom were already drawing compensation, and 14,000 completing the waiting period required for eligibility. The average weekly check for total unemployment was $10.60.

The paper industry as a whole made perhaps the smallest drain on the reserves, because employment in Wisconsin mills has been above the average for the state.

Power Plant on Outagamie Site

The former Outagamie Paper Company mill here will be the site of a new hydro-electric plant to be erected by the City of Kaukauna. Approval has been given by the Wisconsin Public Service Commission to the city's application for the projected improvement, the total cost of which will be approximately $475,000.

The city bought the property a year ago from its most recent owner, the Patten Paper Company, Ltd., at a foreclosure sale, paying $4,850 and the outstanding taxes of $60,671. The purchase included a hydro-electric plant and water power rights giving the authority to use 32 per cent of the flow of the Fox River as it enters a pond held by a United States government dam.

Removal of the old hydro-electric plant will be the first step. The city then plans to build a new plant using 1,600 feet of water a second. One 2,400 kilowatt turbo-generator will be installed. A govern-

(Continued on page 26)

Midwest Paper Trade Expects Uptrend Soon

With Book and Rag Content Bond Papers on More Stable Basis and Kraft Market Optimistic, Merchants in Chicago Territory Believe Better Business Lies Ahead—Plan N.P.T.A. Exhibits — Other Late Market News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., July 11, 1938—With recent upheavals seemingly entirely out of the way, the Chicago paper market has settled back to await the next move, which the great majority seem to feel will be markedly upward. The end of the current week found rag content bond prices holding their own and book papers obviously more stabilized with several local jobbers out with current prices based on the new levels. The kraft market is unchanged and also shares the belief that prices are at a base where the next move can only be upward. Cover papers showed no change according to reports while newsprints and groundwoods were quoted about "as is" in a comparatively dull market.

Waste prices were not as hopeless during the week and some firming up here and there is reported to have changed the "very weak" characterization locally to a "soft" condition. All in all the general market is relieved that the situation has rounded out and is putting in a lot of good hard work on present prices in the firm conviction that better business is ahead in the very near future.

Plan N. P. T. A. Fall Exhibits

A number of Chicago paper executives are cooperating in helping to make the September meetings of the National Paper Trade Association the most successful yet held. Advance information points to a record attendance and widespread organization interest. Among those who are busily engaged in planning for the session are the members of the Exhibit Committee who are expecting about one hundred exhibitors at the Stevens Hotel compared with the fifty who demonstrated their wares last Fall. From the Committee has gone a great deal of explanatory information to hundreds of manufacturers and convertors of various lines and grades of paper, the information giving complete details as to space requirements and outlining the plans and regulations covering the special exhibit space on the fifth and sixth floors of the big Chicago hotel. It is understood that all exhibitors must have so signified by or on August 8 in order to participate in the drawings for space. C. E. Roach of the Capitol City Paper Company, Springfield, Illinois, is the Illinois member on the Exhibitors Committee.

The midwest division of the Salesmen's Association of the Paper Industry is also completing plans to make its final golf outing synchronize with the N.P.T.A. program and Chairman Graham Olson is forecasting a record turnout for this annual event.

Paper and Twine Club Plans For Fall

Chicago was host to the Board of Governors of the Paper and Twine Club on June 28 when that group met at the Blackstone Hotel with Frank Vaughan of the Bay West Paper Company, Green Bay, Wis. and newly elected president, as the presiding officer. The well attended meeting found the governing board not only interested in perfecting plans for the Paper and Twine Club cooperation during the fall meetings of the National Paper Trade Association but also evidenced a great deal of genuine interest in the future program of work of the Club. An advisory committee has been formed to work out these details and will probably have an outline of the job to be done to aid the paper business when the Fall meeting is held. On the advisory committee from Illinois cities are Neil Nash, Nekoosa-Edwards Paper Company; C. E. Roach, Capitol City Paper Company, Springfield; C. A. Spaulding, Crossett Paper Mills, Chicago; E. G. Schmidt, International Paper Company, Chicago and Leo S. Altholz, Inlander-Steindler Paper Company, Chicago. It is reported that the advisory committee will get together in Chicago on July 26 to assemble data, interchange ideas and begin a comprehensive setting forth of the major objectives of the Club. Meanwhile, members have been urged to send in their ideas of what the interesting and representative group can and should do to aid the paper business.

Midwest S. A. P. I. Golf Outing

The midwest division of the Salesmen's Association of the Paper Industry plans its third golf outing of the season at Bob-O-Link Golf Club on next Friday, July 15. Meanwhile, the group has been holding its weekly sessions on the 38th floor of the Civic Opera Building and will do so at least until the cooler weather comes. Hugh Phillips, vice president of the Eastern Division, was a guest at the last meeting before the Fourth.

Herb Reinhard Goes to Schwartz Co.

Herb Reinhard, for nearly six years identified in a sales capacity with the Brown Company, has recently accepted a position with the Schwarz Paper Company. Mr. Reinhard was manager of the towel sales division of the Brown Company for a number of years and had charge of the development of this product in about twenty midwest States. He will head the towel department of the Schwarz organization which, incidentally, is the distributor locally of the Brown towel lines.

New Paper Mill for South Africa

The American Consulate General at Capetown states that "A British engineer who for the past three years has devoted considerable time to a study of the question of producing kraft paper in the Union of South Africa, has recently been successful in finding a suitable raw material for this purpose in the timber grown in the George-Knysna area of the Cape Province, and having found this suitable raw material he has drawn up plans for the erection of a paper factory to begin operations when the necessary financial arrangements are completed which is stated by him to be 'in the near future.'"

Ontario Paper Co. Builds Pulpwood Plant

Beginning Next Spring, It is Expected That a Minimum of Forty Thousand Cords Will be Handled Through New Outlet — Celebrate Union Anniversary at Port Arthur—Predicts Curtailment of Pulpwood Cutting.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., July 11, 1938—A million dollar development project employing three hundred men is now under way on the Black River timber limits of the Ontario Paper Company at Heron Bay. The plan includes construction of a 290-foot wharf, a power house, town site and other facilities on the north shore of Lake Superior, east of Port Arthur, for the shipping of pulpwood to the plant of the Ontario Paper Company at Thorold, beginning next spring. It is expected that a minimum of forty thousand cords will be handled annually through the new outlet. Woods operations will start this year. A. A. Schmon, president and general manager of the Ontario Paper Company, said that Aiken & MacLacklan, Limited, of St. Catharines, had been given the contract for building the sheet-pile, rock filled wharf while the general contract for the power house and town site had been awarded to Angus Robertson, Limited, of Toronto.

Observe Twentieth Anniversary

The twentieth anniversary of the signing of an agreement between the Port Arthur Paper Company, now the Port Arthur Division of Provincial Paper, Limited, recognizing the formation of a union of the workers into the first Lakehead branch, Local No. 40, of the International Brotherhood of Pulp, Sulphite and Mill Workers was observed recently by nearly two hundred members of the branch and guests at a most enjoyable banquet. John E. Fosberg, president, said that he believed the Union since its formation in 1918 had made for greater harmony between the employers and employees, with the result that there was increased efficiency and satisfaction. He predicted that the workers would do their share in continuing this harmony as long as their rights as workers were respected. A reply was read from A. G. Pounsford, general manager of the mill, who was unable to be present, to the effect that the mill was desirous of keeping up the conditions of the workers. Ald. George Bendell, representing the city council, said that Port Arthur was proud of the mill, its workers, their record of service and the products they had turned out.

Hon. Peter Heenan Speaks on Prospects

Speaking of prospects in the pulp and paper line, Hon. Peter Heenan, Minister of Lands and Forests said there would be curtailment of pulpwood cutting operations in the district of Thunder Bay next winter, unless there was a decided improvement in United States business conditions. A surplus of approximately 300,000 tons of newsprint bought by American publishers in 1937 remained to be depleted before renewed impetus in the industry was felt in the northern part of Ontario. This surplus was being gradually used up. Speaking of the Lake Sulphite Pulp Company's enterprise at Red Rock, Ont., Mr. Heenan stated that while there was no immediate prospect of completion, that the affairs of the company were gradually being brought to the point where a definite plan of rehabilitation could be considered. The latest financial group to become interested in the Lake Sulphite Pulp Company's affairs are representative British business men, who were now on their way to Canada to investigate the field with a view to offering a proposition to the shareholders. Mr. Heenan added that retarded business conditions in the United States had caused the Western Pulp and Paper Company to postpone the construction for this year of a mill at Fort William. This, however, was regarded as a temporary condition beyond the control of the company and the government.

No Progress in Sale of Sturgeon Falls Plant

Not much progress has been made on the proposed sale of the Sturgeon Falls plant of the Abitibi Power and Paper Company, Limited, to a Canadian syndicate headed by W. H. Gibbs which was proposing to manufacture ground wood pulp. There have also been no new developments in regard to the reorganization plans for the Abitibi Company. While originally the bondholders' committee would have had only sixty days in which to appeal on behalf of the Ripley plan from the date of judgment, June 13, the courts are now on vacation and the time for launching an appeal is extended automatically by another thirty days to about September 15. In the meantime apparent discrepancy between senior and junior Abitibi securities is attributed by close observers to the fact that the court decisions are being interpreted as recognizing the "bargaining power" of the junior securities in the face of the theoretically more privileged position of the bondholders.

Heads Engineering Institute

Lorne Goodall, engineer of Provincial Paper, Limited, Port Arthur, Ont., was elected president of the Lakehead branch of the Engineering Institute of Canada at the annual meeting of the organization which was held lately. He succeeds G. R. Duncan.

"Abitibi" Is Launched

An all welded motor vessel, the *Abitibi*, has been launched by Canadian Vickers, Limited, for the Abitibi Power and Paper Company, Limited, Toronto. The vessel has an overall length of 140 feet with a breadth of 29 feet and will be used in the upper lake pulpwood operations of the company.

Tomahawk Profits $29,854

[FROM OUR REGULAR CORRESPONDENT]

TOMAHAWK, Wis., July 11, 1938—A. L. Kreutzer, president of the Tomahawk Kraft Paper Company, announced last week that the net profits for the fiscal year ending May 31 were $29,854, compared to $168,735 during the preceding twelve months.

Philadelphia Expects Better Fall Business

Late Reduction in Prices of Book, Bond and Ledger Papers Held Unfortunate Under Present High Production Costs—Paper and Cordage Association Meet to Stimulate Committee Activities During Summer Months.

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., July 11, 1938 — President Joseph H. Miller of the Philadelphia Paper and Cordage Association, Inc., called a meeting of the directors and committee chairmen of the Association last week. The meeting took place at Graf's restaurant with dinner at 6 o'clock, and in spite of the heavy rain there was almost one hundred per cent attendance.

The purpose of the meeting was to stimulate the various activities and have the officials and committees continue their good work during the summer, when regular meetings are more or less suspended. Mr. Miller made a vigorous appeal for action in furthering several important plans for the remainder of the year. George K. Hooper, president of Hooper Paper & Twine Company, and Jack Howarth, president of J. R. Howarth Paper Company, were delegated a committee of two to publish the new Buyers Guide and Directory of the Association. This is to be completed by the end of the year, and, according to present plans, will be the most complete and elaborate edition yet published. Thousands of dollars worth of business have changed hands, due directly to the listings in the previous directories, and the movement for the interchange of business and information among members is growing rapidly. The benefits which have accrued to members have been extremely gratifying, particularly to those members who have had the foresight to include in the Directory listings a clear and complete description of their products and services.

The Membership Committee will invite a number of selected firms in the paper and cordage industry to attend the September meeting and to become members in this live-wire organization. The membership, now above the one hundred mark, it is expected will total 125 before the end of the year.

Tentative Plans for Christmas Party

Tentative plans for the Association's biggest event of the year—the annual Children's Christmas Party, have already been made. This year's party will be held on the Tuesday before Christmas, December 20th. This is the party at which the paper and cordage industry plays host to some 60 children from the Salvation Army settlement houses, and the children and grownups are already looking forward to the biggest and best party ever. The arrangements are in charge of E. K. Lay and his entertainment committee.

President Miller outlined plenty of work for all the committees and it is expected that committee meetings will be held frequently all through the summer in order that there may be no time lost in promoting good fellowship and the interchange of business among the members of the Association.

Production Costs and Wholesale Prices

The consensus of opinion in this area regarding the reductions in market price of bonds, ledger and book papers is that it has come at a most unfortunate time, when other commodities are turning upward. It is felt that if prices had held for another two weeks that they probably would not have been reduced, and there certainly is every reason to hold these prices, as they are much too low for the average paper mill. While it is true that some prices for raw materials have been reduced, nevertheless the average cost of raw materials going into the manufacture of paper has decreased very slightly indeed, and, on the other hand, there have been increases in Social Security taxes effective this year, which counteract these savings.

The situation at the present time is that inventories have largely been liquidated, and buying should now progress on the basis of actual requirements. This in turn should mean an increase in the rate of operation for paper mills as a whole, and with the prospect of better business during the Fall, prices should increase at that time.

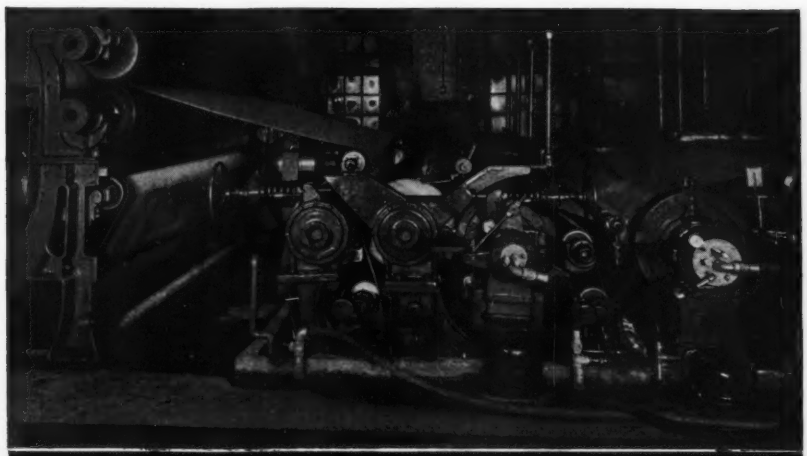
German Paper Industry Busy

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 11, 1938—The Department of Commerce has reports stating that the heavy demand for all products of the German paper industry continued through the first quarter of the year and mills, while working to capacity, were unable to cope with the flood of incoming orders. In order to be able to meet domestic demands a number of concerns were forced to cut down their exports.

The German output of pulp and paper reached a peak figure in 1937 when production of paper totaled 2,836,000 metric tons, an increase of 315,000 tons or 12 per cent over 1936. In addition to this the German mills also produced 733,000 tons of board as compared with 628,000 tons in 1936. Domestic consumption of paper worked out at 36.82 kilograms per capita in 1937 as against 33.27 kilograms in 1936.

Profits are not in proportion to the high activity maintained in all branches of production and trade, but results are considered satisfactory by the majority of manufacturers. The general concensus of opinion is that future earning possibilities will be dependent on the development of raw material prices and of overhead charges in relation to the prices obtainable for the finished products. The latter are under government control and with the exception of newsprint have undergone no change. On the other hand, while prices for paper are subject to strict control, prices for pulpwood have shown steady increase, a development which is watched with some concern by the paper industry.



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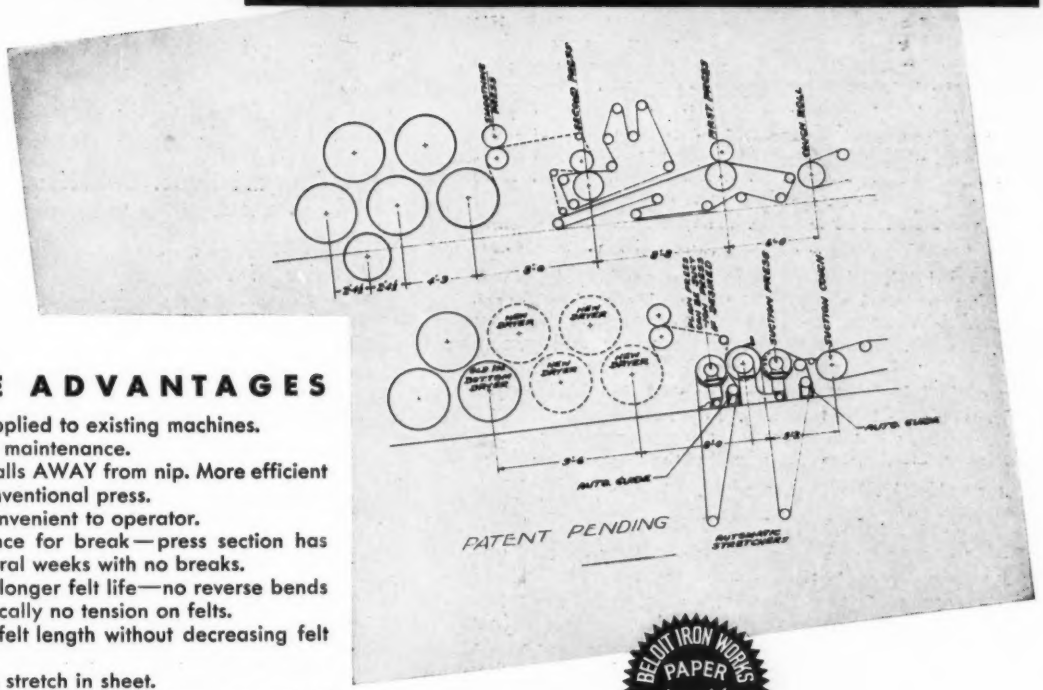

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Financial News of Pulp and Paper Industry

N. S. Stone, of Mosinee Paper Co., Says Business Has Passed Lowest Point in Present Recession—Hinde & Dauch Paper Co. Expects to Earn About $300,000 in First Half—R.F.C. Authorizes Loans to Paper Firms.

NEW YORK STOCK EXCHANGE

High, Low and Last for the Week Ending July 13, 1938

	High	Low	Last
A. P. W.	4	4	4
Armstrong Cork Co.	43¼	40	41¾
Celotex Corp.	25	22	24
Celotex Corp., pf.	70	70	70
Certain-Teed Products Corp.	9½	8½	8¾
Certain-Teed Products Corp., pf.	39½	33⅜	38
Champion Paper & Fibre Co.	30½	27½	28½
Champion Paper & Fibre Co., pf.	97½	97½	97½
Congoleum-Nairn Co.	25¼	22½	24⅞
Container Corp. of America	17⅜	16¼	17
Continental-Diamond Fibre Co.	9¼	8	8⅞
Crown-Zellerbach Co.	14⅛	12¼	13⅛
Flintkote Co.	22¾	19¾	21⅛
Robert Gair	5⅜	4⅜	5⅛
Robert Gair, pf.	18	15¼	16
International Paper & Power	11½	10	10½
International Paper & Power, pf.	45⅜	41⅜	42⅞
Johns-Manville Corp.	95½	89	93½
Johns-Manville Corp., pf.	130	130	130
Kimberly-Clark Corp.	28	26⅛	27¾
MacAndrews & Forbes	29	28⅞	29
Masonite Corp.	45½	42	44¾
Mead Corp.	14½	12⅜	13
Mead Corp., pf.	62	61⅜	61⅜
Paraffine Companies, Inc.	48	45¼	47⅜
Paraffine Companies, Inc., pf.	92	92	92
Ruberoid Co.	26	23	23
Scott Paper Co.	45⅜	44	44½
Sutherland Paper Co.	28	26	28
Union Bag & Paper Corp.	14⅜	12⅞	13½
United Paperboard Co.	8	7	7⅜
U. S. Gypsum Co.	92⅛	86	89¼
U. S. Gypsum Co., pf.	171¾	170	171¾

NEW YORK CURB EXCHANGE

High, Low and Last for the Week Ending July 13, 1938

	High	Low	Last
American Box Board Co.	11⅜	10¼	11⅛
Brown Co., pf.	33	28	31
Great Northern Paper	30	29¾	30
St. Regis Paper Co.	4½	3¾	3⅞
St. Regis Paper Co., pf.	65½	65½	65½
Taggart Corp.	6⅜	5⅜	5¾

Mosinee Holds Annual Meeting

[FROM OUR REGULAR CORRESPONDENT]

WAUSAU, Wis., July 11, 1938—Stockholders of the Mosinee Paper Mills Company, Mosinee, Wis., held their annual meeting here last week at the Wausau Club. In his report as secretary and general manager, Norman S. Stone declared "results were satisfactory during the past year considering the drastic decline in business. I feel business has passed its lowest point in the present recession. We can look for gradual improvement in the future and this should be reflected in our business."

Directors and officers were reelected as follows: Aytch P. Woodson, president; George L. Ruder, vice-president; Norman S. Stone, secretary and general manager; A. L. Kreutzer, treasurer, and H. M. Thompson, Milwaukee, Wis.; Howard L. Dessert, Mosinee, J. D. Mylrea, Rhinelander, Wis., and John M. Lull, directors.

A stockholders' and directors' meeting of the Bay West Paper Company, Green Bay, Wis., towel manufacturing subsidiary of the Mosinee company, also was held. Frank P. Vaughn, treasurer and general manager, reported satisfactory earnings during the past year, and was optimistic over the future.

Directors and officers also were reelected as follows: Mr. Woodson, president; Mr. Dessert, vice-president; Mr. Ruder, secretary, and Mr. Vaughn, treasurer and general manager. Mr. Stone, Mr. Kreutzer and Karl Mathie of Wausau, are the remaining directors.

Hinde & Dauche Earn About $300,000

Earnings of the Hinde & Dauch Paper Company in the first half are expected to be around $300,000 or about 60 cents a common share after allowance for preferred dividend requirements.

In the first half of 1937 consolidated net profit was $809,006, equal to $1.97 a share on 360,000 common shares, after preferred dividends paid, according to the *Wall Street Journal.*

The company's sales, which are determined largely by the volume of general industrial production, are running 25% to 30% under the 1937 level. Sales in all of 1937 amounted to $15,827,355.

July is ordinarily rather a slow month in the paper box industry but by August company should begin to get considerable business from packers of fruits and vegetables. Indications are that the pack this year will be quite large.

Any late summer or fall pickup in general business should also benefit Hinde & Dauch rather quickly since box inventories of most of its customers are believed to be quite low.

The company is getting considerable volume this year from corrugated paper display stands which are sold to manufacturers of soaps, canned goods and other products for distribution to retail outlets.

Taggart Bros. Co. Dissolves

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., July 11, 1938—A certificate of dissolution of Taggart Brothers Company, Inc., was filed with the county clerk on June 29 prior to the recent consolidation of the various paper and paper bag manufacturing units of the concern under the name Taggart Corporation, of which Roy K. Ferguson is the president. The consolidation consisted of the Taggart Brothers Company, of this city, the Taggart Oswego Paper Corporation, and the Taggart Corporation, the three concerns having mills in this city, Herrings, Carthage and Oswego. Taggart Brothers Company, Inc., was incorporated in 1886 under state laws with a capital of $50,000 by the late Byron B. Taggart, the late William W. Taggart, George C. Sherman, Fanny L. Taggart and Alice L. Taggart. Byron B. Taggart was president until his death in 1897 when W. W. Taggart assumed the office and retained it until his death. Byron Taggart, Jr., was vice president and the late Harry W. Taggart, secretary and treasurer. The business was started in 1864 by the late Byron Taggart and A. H. Hall in this city.

Paper Concerns Incorporate

[FROM OUR REGULAR CORRESPONDENT]

DEXTER, N. Y., July 11, 1938—Incorporation articles showing the formation of the Anderson Land Company, Inc., were filed last week with the county

"TROUBLE ROW" was what they once called this battery of paper pulp beaters in the plant of Peter J. Schweitzer, Inc., manufacturer of fine cigarette papers at Elizabeth, N. J. Belts were the trouble—belts that stretched, broke and "burned up," causing frequent beater shutdowns. Literally dozens of different belts had been tried, *and none lasted over two years!*

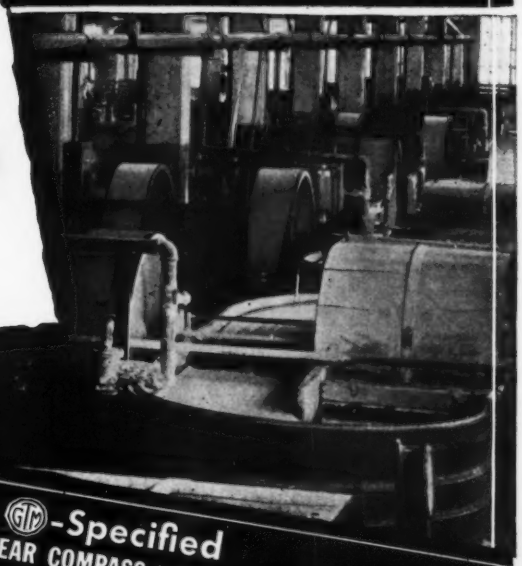
Then after careful analysis by the G.T.M.—Goodyear Technical Man—two Goodyear COMPASS "40" Endless Belts were applied to a pair of these drives in March 1934 *"on trial."* That trial is still going on. After more than four years' continuous service, running 24 hours a day most of the time, these two belts are still on the job.

Now 100% COMPASS

But that's only the beginning. More than two years ago all 18 beaters in this mill and 8 in the company's Jersey City plant were changed over to COMPASS Belts. Since then there has not been one shutdown for belt repair on a single one of these 26 beaters, and every belt is still in tip-top shape!

Compare that with the previous record of continual belt trouble. That's the difference G.T.M.-specification and Goodyear quality make in all uses of mechanical rubber goods. To bring the G.T.M. to your office, write Goodyear, Akron, Ohio, or Los Angeles, California—or phone the nearest Goodyear Mechanical Rubber Goods Distributor.

A TALE OF 26 BEATERS —and the G.T.M.



THE GREATEST NAME IN RUBBER

GOODYEAR

clerk and the capitalization is $35,000. The charter is perpetual and permits the manufacture and sale of pulp and paper. The company will take over the mills of the bankrupt Sherman Paper Company, which operated branches at Great Bend, Felts Mills and Lefevbre. The directors are Charles A. Phelps, Henry A. Wise and Miss Ola I. Liddy.

A certificate showing the merger of the Ontario Specialties Company, of Watertown, and the St. Regis Securities Corporation with the St. Regis Paper Company was also filed. The document shows that the St. Regis Paper Company has owned all of the issued and outstanding shares of the other two concerns for some time.

Authorize R. F. C. Loans To Paper Firms

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 13, 1938—During the month of May the Reconstruction Finance Corporation authorized a number of industrial loans including the following: Haigh Paper Box Corporation, Boston, Massachusetts, $6,000; Brooklyn Paper Box Corporation, Brooklyn, New York, $3,000; Futuristic Box Company, Inc., Brooklyn, New York, $15,000; Tarentum Paper Mills, Tarentum, Pennsylvania, $50,000; and Puerto Rico Paper Bag Company, San Juan, Puerto Rico, $25,000.

While all of these loans were authorized during the month of May no part of the money had been disbursed up to the last of May.

Ward Paper Co. To Expand

[FROM OUR REGULAR CORRESPONDENT]

MERRILL, Wis., July 11, 1938—Expansion of the Ward Paper Company is planned as the result of a loan of $250,000 granted by the Reconstruction Finance Corporation at Washington. The company purchased the former Grandfather Falls Paper Company some time ago and converted it from a newsprint mill to high grade sulphites, and has been developing a market. The company's plans have not been announced, except its statement to RFC that it will add 75 men to its payroll as soon as the money is made available.

Rise in Paper Securities

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Ont., July 11, 1938—The rise in the stock markets in the United States has been reflected in a similar movement on the Montreal Stock Exchange the upward surge being somewhat of a record for the period involved. Leading the upswing were the paper stocks, particularly such issues as St. Lawrence Corporation, Abitibi, Price Brothers, Howard Smith, Bathurst Power and Paper, Dryden Paper, Consolidated Paper, Donnacona Paper, and Hinde and Dauch.

M. & O. Gets Tax Rebate

WASHINGTON, D. C., July 13, 1938—Guy T. Helvering, Commissioner of Internal Revenue, has announced rebate to the Minnesota and Ontario Paper Company, Minneapolis, Minnesota, amounting to $42,379 as an overassessment of income and profits taxes and interest for the year 1920.

TAPPI Standards Issued

The Technical Association of the Pulp and Paper Industry has recently issued, to its members, the following tentative and revised standards:

O-401 p-37 Alkaline Pulping Thermal Code
O-402 p-37 Standard Terms Used in the Soda Pulping Process
O-403 p-37 Analysis of Sulphite Waste Liquor
T-8 sm-37 Species Identification of Wood and Wood Fibres
T-201 m-37 Isolation of Cellulose by Chlorination Method
T206 m-37 Cuprammonium Disperse Viscosity of Pulp
T-214 m-37 Permanganate Number of Pulp
T-215 m-38 Copper Number of Pulp
T-413 m-38 Ash of Paper
T-414 m-37 Tearing Resistance of Paper
T-421 m-38 Mineral Filler and Mineral Coating of Paper
T-430 m-38 Copper Number of Paper
T-438 m-37 Zinc Pigments of Paper
T-439 m-37 Titanium Pigments in Paper

Note: Only one sheet of this method was sent out. There were no corrections in the second sheet but a copy will be sent later to keep set uniform.

T-440 m-37 Alkali-Staining Property of Paper
T-441 m-37 Water Absorptiveness of Non-Bibulous Paper and Paper Board
T-610 m-37 Preparation and Standardization of Volumetric Solutions
T-614 m-37 Analysis of Alum
T-615 m-37 Analysis of Mineral Fillers

Although these methods are sent without charge to members of the Association, non-members may purchase any individual standard at 25 cents (order by number) from TAPPI, 3814 Chanin Building, New York, N. Y.

I. L. Gartland Made Vice President

In recognition of his outstanding work in modernizing the manufacturing system of the D. M. Bare Paper Company, Roaring Spring, Pa., I. L. Gartland has been elected vice president and director, according to an announcement by Ivan Garver, president. Mr. Gartland, who was formerly general sales manager of the company, was also responsible for the installation of an extensive research laboratory and has created several new printing papers for special reproduction processes.

In addition to being an experienced technician, Mr. Gartland is a practical paper maker and has operated nearly every type of paper machine. He entered the sales field of the industry about 16 years ago and has been associated with a number of the largest paper manufacturers in the country, including International Paper Company, Union Bag and Paper Corporation, Port Huron Sulphite and Paper Company, and the Fletcher Paper Company. Just prior to his association with the Bare organization, he was general sales manager of the Northwest Paper Company, a Weyerhaeuser affiliate.

Mr. Gartland is a member of the University Club, the Advertising Federation of America, Chi Phi Pi and Epsilon Alpha Sigma, the Royal Photographic Society of Great Britain, and the Wykagyl Country Club of New Rochelle, N. Y. He is a veteran of the 107th infantry, 7th New York National Guard.

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EBG Liquid Chlorine

FIRST IN THE COUNTRY

Color and Its Application to the Paper Industry*

By Benjamin J. Mayo, Jr.[1]

Although it is not generally known, the art of color manufacturing is one of the world's oldest industries. References to colors are found in some of the earliest documents, and that the Egyptians, Assyrians and Chinese and that other races understood something about color making is attested by old paintings depicting human figures arrayed in colored garments.

Historical Development

The colors of the early ages were sought in every direction and were chiefly of mineral and vegetable origin. Some of the more prominent colors that were in use during the early times were cinnabar, madder lake, sequi-oxide of iron, persian red, ochres, cochineal lakes, siennas, Lapis-Lazuli, indigo blue, etc. There is reason to believe that there were many others being used of minor importance.

The early peoples were, however, generally unfamiliar with the colors that are used today, and it was not until 1704 that the first prussian blue was produced by Diesbach, a German chemist.

Another important discovery was the making of artificial ultramarine which took place in 1828 by Guimet, a French chemist. The color industry as a whole progressed very slowly both in organic and inorganic color matter, and it has been during the past 25 years that the most radical progress has been made.

When Woehler found a way of producing Urea synthetically, a forward step in chemistry was marked.

In 1856, Perkin, an English chemist, successfully made mauve from a coal tar derivative. This was the beginning of the artificial organic color industry. From that time on, the progress was mostly in the hands of the Germans and Swiss chemists who produced many different colors based on Perkin's original discovery.

Inorganic colors such as chrome greens, iron blues and chrome yellows were made in this country in the late 1800's. It was not until nearly the turn of the century that the first colors of organic nature were made in this country, and consisted mostly of paranitraniline reds and imitation vermilion. The para reds were of the reduced type because they did not have sufficient knowledge to produce satisfactory toners, the main difficulty being their exceedingly hard texture. The imitation vermilions were eosin struck on orange mineral, and although brilliant in shade, they lacked permanency to light, were reactive to many gum resin vehicles, and because of their high specific gravity, settled in linseed oil vehicles. They were used mostly for farm implement paints, etc. However, the intermediates involved were imported from Germany and Switzerland, and continued to be until the World War, at which time we were obliged to take the matter into our own hands to make organic colors. The Germans were unable to get their materials to this country because of the blockade, although they made a few successful efforts.

It is interesting to me to have been one of the first to work on intermediates in this country. During the summer of 1915, I worked in a little chemical company in Perth Amboy, N. J., and we endeavored to make beta naphthol and aniline oil which were the more important intermediates necessary to make progress in the organic chemical industry. The chemist of that day knew very little about processes, and further than that, we were handicapped because of lack of knowledge as to the proper apparatus to use. We recall very definitely the sorry looking beta naphthol that we first produced. The color should have been white with a pinkish tinge, and we were successful in making a jet black beta naphthol. In the case of the aniline oil, the color should have been water white with a straw tinge. The material we made was blood red in color. Regardless of the quality, we were able to dispose of it very readily and could not make enough to satisfy the demand.

There was not too much progress made in this country in the advancement of the color industry because of the war taking most of our attention, but immediately after the war, we went to work, and since that time, there has been considerable progress made. We are at the present time making practically all of the colors used in this country, and we have found that our products are superior to those that can be obtained from abroad. This is a tribute to the American chemist.

In passing, I would like to mention one important advancement which took place about 15 years ago. A number of toners were made with basic dyestuffs and precipitated with tannic acid or tartar emetic. These colors had good strength, brilliance of tone, etc., but they lacked in lightfastness. By substituting phosphotungstic or phosphomolybdic acid for the tannic acid as the precipitating agent, similar colors were produced, differing in that they had especially good lightfastness. This represented one of the major advances in the color industry.

The Fadeometer is an instrument that played a very important part in the development of lightfast colors. With this instrument it is possible to determine in a few hours the relative lightfastness of a color, whereas if we depended on natural sunlight, the same results would require several days.

Aside from improving on the colors that already were known, there have been developed certain new colors which are finding a place not only in the paper industry, but in other industries as well. We refer to such discoveries as the making of a molybdated chrome orange, and one other that we might mention is the development of a phthalocyanine blue. There are many others that we might mention, but you are

* Presented at the meeting of the New England Section of the Technical Association of the Pulp and Paper Industry, Roger Smith Hotel, Holyoke, Mass., March 30, 1938.

[1] District Manager, Pigment Color Division, Imperial Paper and Color Corporation, Statler Bldg., Boston, Mass.

all too familiar with these new developments since they are passed on to you as they come along.

Color Analysis and Measurement

Coloring matter is generally understood, but we sometimes forget that color is simply a sensation resulting from the action of light on the nerve centers or retina of the eye, and to get the sensation, two things are necessary: one is light, and the other is an object which has the faculty of breaking up the spectrum into its component parts, reflecting some, and absorbing others. In other words, when looking at a green shade, it is green simply because there is a certain amount of blue and yellow being reflected; whereas the red portion is entirely absorbed. Practically speaking, there are three primary colors, namely, red, yellow and blue, and from these colors, together with black and white, it should be possible to get any shade necessary. However, it is not possible to do this because we do not have available a true spectrum red, a true spectrum blue, or a true spectrum yellow. There are available several shades of red. For instance, we have light and deep red. The light red has a portion of yellow; where the deep red has a portion of blue. This really makes the colors that we have available secondary colors.

When we consider color, we think of the spectrum and that opposites are complementary colors, and will tend to produce gray. In other words, we find that the complementary color to yellow on the chart is violet, and then if we have a color that has a yellow tinge, we can neutralize that yellow tinge by introducing violet. Inasmuch as most raw paper stock is inclined toward the yellow cast, the violets are most popular for tinting purposes.

The color industry as a whole has been very fortunate in recently having placed at its disposal a machine that has an accurate way of recording color readings. The machine has been aptly called a spectro-photometer. It will undoubtedly be used by many color manufacturers as well as other industries interested in colors for the control of standards. We understand that a talk has been given to this group explaining the workings of the machine, and therefore I do not intend to take any more of your time to discuss it with you.

Up until the advent of the spectrophotometer, there have been several machines developed primarily designed to record color readings, but they have depended somewhat on the human eye, and of course this procedure is never positive.

Some years ago we worked with Mr. Howland who was a technician and an excellent one, having graduated from the Massachusetts Institute of Technology, and who devoted his life to the development of a color system. His system was similar to many others in that he spun colors to match definite standards. He used as his standards, the primary colors together with magnesium carbonate, the whitest known white at that time, and darkness for his black. As all color men know, the hardest colors to control are those of tints containing several different colors. We refer to grays, fauns, salmons, etc. In the line that I was particularly interested in at that time we had very great difficulty controlling the standards in these particular shades. We employed as a medium, oils which were of the oxidizing type, and they would affect the shade even when tightly sealed in a can. There was also the problem of changing in the dry form due to oxidation. This meant that after a standard was set up and no means of recording the color was taken, drifting took place, and in a few years the shade was far removed from the original color. Mr. Howland's machine was designed so that he could record his readings in percentages. As an example, for a gray, it would probably read: 95 per cent white, 2 yellow, 2 red and 1 black. The segments were, of course, controlled so that very close readings could be made, but aside from depending on the eye for readings, it was also difficult to maintain definite shades in the primary colors arbitrarily selected.

Fortunately for the color manufacturer, he is not confronted with the problem of color standards changing in shade. The standards are kept in tin containers where even diffused sunlight cannot affect them. It has been our experience that when a color is not fabricated, the shade remains constant. In the case of a finished product, regardless of whether it is in paper manufacturing or any other industry, changes are bound to take place, and it is for this particular problem that the spectrophotometer will be useful. For instance, if a customer sets up a certain shade as standard, it is possible over a period of years to constantly check production to see that shipments are uniform. No one fully appreciates what a color man has to contend with in a paper mill, or any other mill where colors play such an important role. First of all, in matching a definite shade in the beater, the resulting shade, after being dried and calendered, will show a marked difference. This adjustment is usually taken care of by the color man once he is accustomed to the degree of change expected, and a good man can hit the shades very well when he becomes thoroughly familiar with the colors that he employs. You can readily see that uniformity of colors as received by the mill is of vast importance if duplicate results are to be expected on several runs of paper interspaced over a period of several years. The spectrophotometer will play the part of the umpire and prevent drifting. It will also settle disputes should there be any question arise between the supplier and the consumer.

We all recognize the importance of getting good color matches because in a finished paper, the one thing that a customer will very likely notice first is a difference in shade, and usually people are very fussy about some particular shade that might strike their fancy and on which they have standardized. We are not trying to infer that it is possible to send out off-standard production, but we really believe that color makes a big impression with the customer and the thing that would very likely be the first thing criticized.

Dyestuffs and Pigment Colors

Colors may be classified into two general groups—dyestuffs and pigment colors. Dyestuffs can be classified as coloring matter that is soluble in water, oil or alcohol; whereas pigment colors are not soluble in these media. The dyestuff group adapted for paper work can be sub-divided into acid, basic and direct dyes. The pigment group can be sub-divided into four groups; namely, fume pigments, earth pigments, fire processed pigments and chemical pigments which are in most cases precipitates.

In the case of fume process, typical examples would be carbon and lamp black which are produced

by burning carbonaceous matter in the absence of sufficient air to complete combustion.

Earth colors are natural earth pigments that are taken from the ground, washed, filtered, dried, etc.

Fire processed pigments would embody such pigments as ultramarine blue which is produced by burning sulphur, soda ash, silicates, etc., together at a very high temperature. As a result of the fusion, complex thio-silicates are formed, commonly known as ultramarine blue.

Chemical pigments represent by far the largest group of pigment colors and in this group there are several hundred raw materials used, the principal ones being bichromate of soda, chlorate of potash, prussiate of soda, nitric, sulphuric and hydrochloric acids, and for the organic colors also dyestuffs and intermediates such as beta naphthol, paranitraniline, metanitroparatoluidine and tobias acid. Here again we are only mentioning a few of the more important ones. In referring to intermediates we believe you understand that an intermediate has no coloring value in itself, but when combined with another, a color effect will be the result.

It is very simple for anyone to precipitate a color. There are many books available containing information as to how it can be done. This is the simple part of color making, and if this was all that there was to it, all the money spent on color technicians could be eliminated. However, the most important requisite in successful color making is to be able to duplicate results. The chemical precipitants used are a minor factor, and considerable progress in the development of better colors has been due to more study of the physical properties of colors. Rate of precipitation, temperature, speed of agitation—all have an important bearing on the results obtained. Also, the equipment used, such as tanks, play an important part. It is possible to make two colors of exactly the same chemical composition, but in one case you will have a color that will have considerably more strength as compared with the other. Furthermore, colors may vary very slightly in chemical composition such as chromium oxide and hydrated chromium oxide and still possess entirely different color value. The hydrated type is much more brilliant in mass tone and tremendously cleaner in tint tone. Many of these differences are governed by certain little variations in manufacturing operations.

Pigments for Tinting

There has been considerable work done in late years on the making of colors with additional strength due to smaller particle size without affecting the tone of the color.

Another advancement is in the treatment of the particles so as to break down surface tension. An excellent example of progress along these lines is illustrated in the so-called phosphotungstic blues used for tinting whites in the paper trade. It is possible with certain treatment to make pigments that will disperse in water like dyestuffs, but are in reality pigments. These colors, as you know, are finding a definite place in the paper industry, and are being used in very large volume for the tinting of whites.

Although pigment colors play a minor role from a volume standpoint in beater work, they play an important role because of their distinct advantages for certain objectives which cannot be accomplished with dyestuffs. We are referring particularly to pigments that are used for the tinting of whites in the beater.

There are generally three colors used for this type production—indanthrene blue, soluble blue and phosphotungstic blues. Indanthrene blue is used sparingly because of its high cost, but where the very best permanency is required, nothing surpasses it. It is not as brilliant as the phosphotungstic blues. Soluble blue is used only to a small degree in the tinting of whites because it has a yellow content and does not do as an effective job as the phosphotungstic blues. The phosphotungstic blues are precipitates of either methyl violet or victoria blue which means that it is possible to get these phosphotungstic colors in very red tones or on the ultramarine tone. The color man selects the one he finds best to work for his particular requirements, depending on the initial shade of the stock before use of color, and also to some extent on the shade that he requires to suit his particular customer. The most common phosphotungstic used is inclined toward the violet, although we know that certain manufacturers are using several shades. It is possible to use the green and red tone and blend them as desired.

The first and most important requisite in considering the type of color to use for the making of a shade is to take into consideration the cost. It is a day and age of keen competition, and if it is possible to cut corners in any way, the proper selection of color means a great deal toward that end. Of course in taking into consideration the most economical procedure, it is paramount that the finished product meets the specifications set up by the consumer. Dyestuffs play a more important part in paper making than do pigment colors because it is possible to introduce chemicals into the beater, to set a dyestuff to the fibers and thereby form a bond. This is essentially the same procedure followed by a pigment manufacturer in the making of organic pigments. In introducing a pigment into the beater, no chemical bondage takes place, and some loss of color is the result. However, there is some bondage due to fixative properties of size and alum. This means that in a great many cases, the use of certain organic pigments as compared with dyestuffs of same shade will run the cost up higher. Acid dyes are most generally used because they have a slightly better permanency than basic dyestuffs. Also, they produce a cleaner sheet than basics because when using basic dyes, tannic acid is introduced to set the dye, and this dulls the sheet. It is a common practice, and a good one, to use pigments and tone them up with dyestuffs. The pigments place the finished product in the lightfast class and the dyestuffs impart the additional brilliancy desired.

There are many cases where pigments do work to advantage. Umbers and ochres are used to produce fawns, and they are not only economical to use, but are indispensable because of their extreme permanency to light even in very weak tints. A pigment color that has an important place in the beater room is chrome yellow, usually of the primrose or lemon shades. It is true that chrome yellows, like most pigments, are inclined to produce two-sided effects, but this can be controlled to a large degree by the proper build up. Chrome yellows are desirable because of their permanency to light, low cost and added filling properties not obtained with dyestuffs of the same shade. Chrome yellows were at one time used only in pulp form, but the pigment manufacturer has been able to adjust the fineness of the dry powder so that it can be introduced into the beater without diffi-

culty. The pulps were used because in this form they are in a very fine state of subdivision. However, the dry colors are such that they cause no difficulty along these lines and they overcome the possibility of drying out, and variants in the dry content once experienced with pulp colors. Although dry chrome yellow is used by many manufacturers, it is also true that many paper manufacturers have tried dry chrome yellows and have gone back to pulps, finding that they work better in their particular manufacturing operations. It is a matter of opinion and rests entirely with the mill superintendent, but in any case, this type of coloring matter does a commendable job.

Soluble prussian blue is another pigment color that finds a very definite place in the paper industry. It is used with excellent success in producing deep blues and can be blended with chrome yellows to obtain a range of greens from the deep shade to the light green shades, depending on the proportions used. Soluble blue is permanent to light in all degrees of concentration, and is excellent from a dispersion standpoint as it forms a colloid with water. Being a pigment color of a colloidal nature, it will show only slightly two-sided effects, and in the heavy tones this condition is practically negligible.

Other pigments used in beater work are blacks which might be carbon black, or bone black, and these pigments are used principally for making photograph album papers, blotters, etc.

Surface Coating

The surface coating industry is becoming more tied up with direct paper making, and although we have not seen any machines, we understand that there are at the present time set-ups where it is possible to coat papers after they have left the wet end and before they have entered the driers. This is a tremendous step forward because it eliminates much unnecessary operation. In other words, it is the usual custom to take finished paper and put it through a regular coating machine. With the new line-up, the paper is made and the coating applied in the same operation. Coated paper can be generally divided into two groups—white coated paper for magazine stocks, and colored coated papers for specialties, etc. The white clay coated stock is a tremendous business and although many of the cheaper magazines do not use coated papers, more of the finer grade magazines use an excellent grade of coated papers. Among other things, the clay-coated paper produces an excellent surface for printing purposes.

Color is very important in these magazine papers, and many blues, violets, etc., have been submitted as possibilities for tinting purposes. However, the only real satisfactory blue that is universally used is ultramarine blue. It has good lightfastness, produces a good clean tone, and its only drawback is that it is liable to show some mottling if not properly handled.

Phosphotungstic blues, as well as soluble blues have been used sparingly, but in a high class paper they are not considered.

The fancy papers, of which the 26 pounds paper would be a typical case, represent a very large outlet for coated papers. They come in a variety of shades, and it is possible to use almost any type pigment available to get various effects. The color used depends upon the quality and specifications as set up by the customer. Many times it is possible to use an ordinary dyestuff where a slight bleeding and lightfastness is of no consequence. However, the better grade of coated papers are all coated with pigment colors possessing good lightfastness and non bleeding qualities. There are many diversifications in the formulation in this industry. The principal constituent is casein, and other ingredients are added such as borax, waxes, shellac, gum arabic, fillers, etc., to get the finish and sizing desired. The three common finishes are known as plate, friction and flint. They are employed to produce the effect depending upon the finish required. In a number of instances, the finished coating is the same shade as the paper to which the coating has been applied. In these instances, it is possible to use a casein coating with dyestuff which by proper calendering, etc., will produce a color of good depth.

Mica finishes have been popular for several years for greeting card stocks. The color effect is produced by making a casein coating containing mica and obtain the shade desired by introducing dyestuffs. These finishes are poor from a permanency standpoint, but they produce effects appealing to the eye. Pigment colors would neutralize the brilliant mica effect and therefore are not used.

In most cases, the fillers used are the fine clays that are available today and where high gloss is required, satin white is very often utilized. The clays are desirable for whites because of their opacity; whereas the satin white is sometimes used for colors to bring out brilliance. There are other fillers used such as blanc fixe, etc., which are used to impart certain effects required. In the better grade of papers, it is usually the custom to use ammonia as a stabilizer for caseins because when the paper dries, the ammonia evaporates and there is no printing problem involved.

The coating of paper can be accomplished with very thin coats or heavy coats depending on the stock to which the material is applied. On board stock, a much heavier casein coat can be applied than on a thin stock. Formaldehyde has been used in recent years both as a water-proofer and preservative for casein. In the wallpaper industry, it does a very efficient job and has meant the salability of wallpapers that can be termed as washable. Up until a few years ago, washable wallpaper was unknown. There was available a wallpaper that could be cleaned, but it was an ordinary wallpaper that had been top-coated with a lacquer. This gave the paper a harsh, glossy appearance. Today we have washable wallpapers that can be obtained in any design desired, and at the same time, the softness and color effect of old type wallpaper is maintained. This very desirable feature has been accomplished without additional cost to the consumer. It means that with washable paper, we can remove stains, pencil marks, crayon marks, grease spots, etc., from the paper without affecting the design, and after cleaning, the surface will be the same as other portions of the paper not touched.

As mentioned above, almost any type color can be used in the surface coating industry. The principal dyes used are acid dyes which seem to work much better than the basic dyes. The direct dyes also work successfully in surface coating work and the main objection to this type is that they are more expensive, although they do possess much better lightfastness. Often a dye is used to tone up a pigment color and thereby obtain more brilliance.

The common pigments used in surface coating

work are chrome yellows which range from the primrose to the deep orange shades. The oranges are not used to any extent because it has been found more practical to use dyestuffs, although there is available on the market at the present time a molybdated chrome orange which approximates the brilliance and depth of acid orange, and at the same time has better lightfastness and opacity.

For blues, ultramarine and iron blues of bronze and steel blue type are used. They possess excellent permanency and take care of the blue question very nicely.

Chrome greens in all shades make excellent coating colors. In recent years, there has been a call for greens possessing exceptionally good lightfastness in pastel tints. This has been accomplished by the use of hydrated chromium oxide and crossing with zinc yellow. An excellent range of greens can be obtained by varying the proportions.

Reds present a very difficult problem to the surface coater. The types that have been used to a large extent have been turkey reds, scarlet lakes, etc. However, this type are giving way to the more permanent colors such as toluidine, para red, leithol reds, etc. The toners have not been developed to give quite as clean a color as the non permanent lakes, but by proper manipulation, reasonable results can be obtained. Toluidine represents a slightly higher cost as compared with the non permanent lakes, but the main drawback to this color is that it has a bronzy appearance when coated which makes it look brown in comparison.

Lithol reds are beginning to find a place in the industry because of their much better permanency and cleanness of undertone as compared with scarlet lakes. Many of these toners have presented a problem in that they have caused foaming in the color box and therefore a uniform sheet is not obtained. This foaming is very likely due to some chemical action of the color with the casein, and the pine oil, etc., is added to break the surface tension. This foaming can be overcome to some extent by introducing a small amount of pine oil, ordinary milk used on the basis of three quarts to 100 gallons, or the addition of common chemicals designed for this purpose. It is necessary to be very careful when using toners because of the possibility of not getting the brilliance desired, and this accounts for the reason why the industry has stuck to lakes over a long period of years. Also, on certain reds we find that they do not size very well and this means that the color is liable to transfer after being coated.

At the present time there is a goodly amount of maroon lake used for certain coated papers, and it is very difficult to get this same brilliance by using a toner of the same depth. In many cases, the lack of brilliance in the toners is due to their much greater opacity. It is well to consider toners wherever possible because less coats are required and often more lightfast coatings can be obtained if a slight sacrifice in brilliance can be tolerated.

The color problem insofar as the coating industry is concerned resolves itself to the following: For yellows—chrome yellows are generally accepted as being satisfactory. For more permanent work, zinc yellow can be employed. For oranges, a molybdated orange represents an excellent possibility where the orange dyes are not satisfactory. For blues, ultramarine blue and iron blue have been acceptable. The major requirements on blues, however, lean toward ultramarine blue shades. For greens, chrome greens are generally accepted as satisfactory, but for the cleaner greens, dyestuffs or the phosphotungstic colors are necessary, and where extreme permanence is required, the hydrated chromium oxide fits in very nicely. For reds, scarlet lake and turkey reds are used wherever permanency is not of major importance, and toluidine, paras and lithols where it is possible to get the shade and eliminate the foaming tendency.

In this industry as well as in beater work, many of the surface coating technicians use pigment colors and tone them up with dyestuffs. This gives general satisfaction although it is to be remembered that the paper industry is becoming more "permanency" conscious, and ways and means of arriving at this end are being practiced more as time goes on.

Appoint Advisory Council

At the Lake Wawasee meeting of the Paper and Twine Club the executive committee was authorized to appoint an advisory council on club policy. The committee, together with several others in Chicago, met last week in Chicago and appointed the entire Board of Directors and officers, together with the following as the advisory council on policy of the club:—Elmer Schmidt, International Paper Company, Chicago, Ill.; Phil Howard, *American Paper Merchant,* Chicago, Ill.; C. A. Spalding, Crossett Paper Mills, Chicago, Ill.; Ray Russell, Marathon Paper Mills Company, Chicago, Ill.; R. W. Miller, Central Ohio Paper Company, Columbus, Ohio; Dick Hartinger, Anchor Paper Company, St. Paul, Minn.; P. W. Lesh, The C. P. Lesh Paper Company, Indianapolis, Ind.; C. E. Roach, Capital City Paper Company, Springfield, Ill.; Charles C. Walden, Jr., *Paper & Paper Products,* New York, N. Y. This council will meet at the Blackstone Hotel, Chicago, on Tuesday, July 26, at 11:00 A. M., to receive such suggestions as have already come in, along with any that the members may give us for Club policy. The following suggestions have already been made:

The general meetings committee has been appointed by the president, as follows:

General Chairman: George Sisson, 3rd, Racquette River Paper Company, Potsdam, N. Y.

Sub-Committee for the Chicago Meeting: Phil Howard, Chairman, *American Paper Merchant,* Chicago, Ill.; Henry Borchardt, Pilcher-Hamilton Company, Chicago; Ray Russell, Marathon Paper Mills Company, Chicago.

Sub-Committee for the New York Meeting: Charles C. Walden, Jr., Chairman, *Paper and Paper Products,* New York, N. Y.; E. F. Miles, Crocker-McElwain Company, New York, N. Y.; Larry McMahon, Geo. W. Millar & Company, New York, N. Y.

Sub-Committee for the June Meeting Tournament: Earl Beier, Chairman, Beier and Company, Chicago, Ill.; Alvin Ostermeyer, Ostermeyer Paper Company, Indianapolis, Ind.; George Farrow, Hoberg Paper and Fibre Company, Green Bay, Wis.

Roach Paper Co. Made Collins' Distributor

The Roach Paper Company of Little Rock, Ark., has been appointed a distributor of the A. M. Collins Manufacturing Company cover and book papers.

Government Paper Bids and Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 13, 1938—The Government Printing Office has announced the following paper awards.

The Mathers-Lamm Paper Company will furnish 54,000 sheets of 22¼ x 42 white car sign board at $31.37 per M sheets, bids for which were received on June 27.

Marquette Paper Company will furnish 60,000 pounds of buff wood bristol board in 22-inch rolls at 4.19 cents per pound and the Whitaker Paper Company will furnish 1,600 pounds (10,000 sheets) of 25 x 38, 100 per cent rag, antique finish book paper at 16.18 cents. Bids for these items were received on June 22.

Barton, Duer & Koch Paper Company will furnish 37,400 pounds (400,000 sheets) of 32 x 42 white sulphite writing paper at 6.25 cents per pound and the Marquette Paper Company will furnish 40,000 pounds (208,000 sheets) of 38 x 48 supercalendered book paper at 5.54 cents per pound. Bids for these items were received on June 15.

The Mudge Paper Company will furnish 7,656 pounds (15,600 sheets) of various sizes red rope paper at 7 cents and the Stanford Paper Company will furnish 44,725 pounds (177,500 sheets) of various sizes, 50 per cent rag, lithograph finish map paper at 10.48 cents. Barton, Duer & Koch Paper Company will furnish 10,000 pounds of salmon calendered tag board in 23¼ inch rolls at 7.75 cents and the Aetna Paper Company will furnish 12,037 pounds (131,900 sheets) of 50 per cent rag, colored bond paper at 11.67 cents. R. P. Andrews Paper Company will furnish 7,300 pounds (76,000 sheets) of 20 x 25 antique machine finish cover paper at 7.07 cents. Bids for all these items were received on June 13.

Hurlburt Paper Company will furnish 2,182 pounds (5,000 sheets) of 50 per cent rag, 34 x 50 inch white chart paper at 21.1 cents, bids for which were received on June 10.

Mathers-Lamm Paper Company will furnish 1,260 sheets of 24 x 38 black pressboard at 47.5 cents, bids for which were received on June 8.

The Mudge Paper Company will furnish 40,000 pounds of 24 x 36 rope manila paper at 15.25 cents and the same firm will also furnish 5,000 pounds (52,000 sheets) of 25 per cent rag, Gobelin blue antique finish cover paper at 7.34 cents. Bids for these items were received on June 6.

Barton, Duer & Koch Paper Company will furnish 3,000 pounds of back lining paper for case making machines at 3.24 cents.

Also the R. P. Andrews Paper Company will furnish 10,000 pounds of 34 x 44 hard rolled binders board at 3.91 cents per pound less 2 per cent and the Paterson Parchment Company will furnish 1,000 pounds of vegetable parchment paper for tympan in 48-inch rolls at 28 cents.

The Printing Office has received the following bids for 5,000 sheets of 24 x 36 brown cloth lined paper: Andrews Paper House of York, $128.00 per M sheets; Walker, Goulard Plehn Company, $131.73 less 2 per cent; Stanford Paper Company, $140.00; Mudge Paper Company, $127.04; Barton, Duer & Koch Paper Company, $127.50; R. P. Andrews Paper Company, $131.30; and Whitaker Paper Company, $126.96.

WISCONSIN LEADERSHIP MENACED

(Continued from page 11)

ment grant of $141,000 has been asked to construct the tail-race, and the city will ask additional funds for construction of the plant. Revenue bonds or short term borrowings will be used to finance the remainder.

Thirty-Seven Years as Bleachman

Anton Kroll, bleachman for the Kimberly-Clark Corporation at its mill at Kimberly, Wis., last week completed 37 years of employment with the company. He has been bleachman since the new mill was completed in 1905, and recalled the early days when the day shift was eleven hours and the night shift thirteen. Later the shifts became eight hours, and now they are six. Mr. Kroll received a letter of congratulation from S. F. Shattuck, vice-president of the company.

Badger Reroofing Machine Room

Badger Paper Mills, Inc., Peshtigo, Wis., is replacing the roof on its machine room with one of fireproof texture. The area being covered is 200 by 80 feet. John Salen & Son, Menominee, Mich., are doing the work.

Scankraft Reduces Output

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 6, 1938—At a meeting held in Stockholm recently, Scankraft, the association of Swedish, Norwegian and Finnish kraft paper mills, decided on an additional reduction of 30 percent in their output of kraft paper. A 35 percent reduction having previously been made, this brought the total curtailment on production up to 65 percent. In addition it was decided to reduce prices for most markets by nearly 60 Crowns per ton. Although the measures thus taken reveal the difficult situation prevailing in the paper mills at the present, it seems reasonable to expect that the heavy curtailment will involve a guaranty against further price reductions.

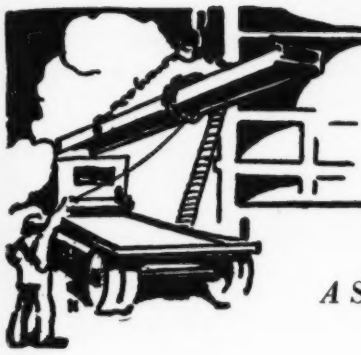
Book Papers More Active

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., July 11, 1938—A result and part of the general industrial improvement which has recently developed may be seen in the incipient activity of book papers, not, however, because of price reductions. Industrial companies around Boston are beginning to release catalogues and advertising pieces. One Boston jobber has closed two large orders for coated book papers which had been pending for six months.

P. H. Glatfelter Co. Has Picnic

SPRING GROVE, Pa., July 11, 1938—More than 1,000 persons accompanied the annual excursion of the employees of the P. H. Glatfelter company, paper manufacturers, Pen-Mar park Saturday, July 2. The excursion train left the paper mill yard on the Western Maryland railway at 8 o'clock, arriving about 10 o'clock. Free tickets were provided by the company for the employees and their wives. A fine program of games and contests was carried out.



CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Financing and Operation of Pulp and Paper Mills

General Construction News

Elizabeth, N. J.—Peter J. Schweitzer, Inc., 994 Newark avenue, manufacturer of carbon papers and other processed paper products, has approved plans for new addition to mill, on site at Newark avenue and Virginia street, to be one-story, estimated to cost close to $35,000, with equipment. New structure will have a glass brick exterior. Work is scheduled to be placed under way at once.

Lufkin, Tex.—Southland Paper Mills, Inc., Lufkin, organized a few months ago, has awarded general contract to the Chapman-Merritt & Scott Corporation, 17 Battery Place, New York, N. Y., for proposed new pulp and paper mill for newsprint production, previously referred to in these columns. Large tract of land has been secured at Lufkin and site will be cleared at once for new buildings, on which work is scheduled to begin in about a month. Plant will be built in four main operating units, each comprising several one and multi-story structures, with finished paper-making divisions to have a rating of 50,000 tons of newsprint per annum. Company has contracted for this entire output with a group of Southern newspapers, identified with the Southern Newspapers Publishers' Association. In connection with mill erection, company will consummate plans for extensive supply of Southern slash pine for pulp wood supply. Entire project will represent an investment of about $7,500,000, and financing has been arranged in that amount. Ernest L. Kurth, head of the Angelina Lumber Company, Lufkin, is president of the new company. George F. Hardy, 305 Broadway, New York, is consulting engineer.

New York, N. Y.—The Price Serwitz Paper Company, 311 West 40th street, commercial paper products, has leased space in building at 339 West 139th street, and will occupy for expansion, including increased storage and distributing facilities.

Niagara Falls, N. Y.—The Electric City Paper Mills, Inc., Adams street, manufacturer of wrapping, lining and kindred paper stocks, has work under way on rebuilding of portion of mill destroyed by fire a number of weeks ago, and will push construction to early completion. New unit will be two-story, estimated to cost about $35,000, with equipment, and will be used for the tar paper division. Erection award was made recently to August Feine & Sons Company, 140 Terrace street, Buffalo, N. Y.

Muskegon, Mich.—The Central Paper Company, Inc., manufacturer of kraft and other paper stocks, is increasing production at its mills, including those of its subsidiary, the United Paper Company. The plants are now giving employment to about 500 persons in different departments, with operations on a better basis than for a number of weeks past. It is expected to hold to present schedules for some time to come.

Toledo, Ohio—Fire recently damaged a portion of plant of Valve Bag Company, 3444 Summit street, manufacturer of paper bags. An official estimate of loss has not been announced, but is reported as slight.

Savannah, Ga.—The Dixie Asphalt Company, Savannah, care of R. M. Nelson, 5021 Eighth avenue, Brooklyn, N. Y., head, is said to have plans under advisement for the construction of new local plant for the production of prepared paper roofing specialties. It will comprise several one-story units, reported to cost over $100,000, including equipment. A plant site will be secured at early date.

New York, N. Y.—Clark Brothers, paper products, wrapping papers, etc., have leased larger space in building at 344 West Thirty-seventh, and will occupy for expansion in storage and distributing departments.

Jacksonville, Fla.—The National Container Corporation, Review avenue, Long Island City, New York, N. Y., manufacturer of paper boxes and containers, is said to have plans nearing completion for construction of new paper box-manufacturing plant unit at new kraft pulp and paper mill at Jacksonville, and will begin work on new structure at early date. Paper converting division will be equipped for large capacity and is reported to cost over $100,000, with machinery. It is understood that structure will be erected by the Merritt-Chapman & Scott Corporation, 17 Battery place, New York, N. Y., contractor for the pulp and paper mill.

New Companies

Boston, Mass.—Bay State Envelope Company, 176 Federal street, has filed notice of organization, to manufacture and deal in commercial envelopes. Company is headed by Elliott A. Niles, 134 Homestead street, Roxbury, Boston.

New York, N. Y.—Karlford Associates, Inc., have been organized with 200 shares of stock, no par value, to manufacture and deal in paper products. New company is represented by Leon Finkelstein, 551 Fifth avenue, New York, attorney.

New Haven, Conn.—Progressive Bag Company has been chartered with capital of $10,000, to manufacture and deal in paper bags and containers, etc.

PAPER TRADE
ESTABLISHED 1872
JOURNAL

Reg. U. S. Pat. Off.

George S. Macdonald, Pres. *Joseph P. Horgan, Secy.*
Executive and Editorial Offices, 15 West 47th St., New York, N. Y.

Henry J. Berger
EDITOR

Ronald G. Macdonald
Editor Technical Section

Lynne M. Lamm
Washington Correspondent

Per Copy, 10 cents United States, Per Annum, $4.00
Canada and Foreign Countries in Postal Union, $6.00

Member Audit Bureau of Circulations

Vol. CVII New York, July 14, 1938 No. 2

COMING EVENTS IN THE PAPER INDUSTRY

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Fall meeting, Northland Hotel, Green Bay, Wis., September 8-10.

NATIONAL PAPER TRADE ASSOCIATION. Fall convention, Stevens Hotel, Chicago, Ill., September 19-21.

INDUSTRIAL REGIMENTATION

Although the new Federal statute, known as the Fair Labor Standards Act of 1938 to take effect next October, fixes a new wage and hour code for American industry, prosperity in the future must depend largely upon mutual good will and cooperation between employer and employee. Heretofore, under the American system, the control of wages and hours has been under the direction of management. With the new law, a definite change occurs and a third party will in a few months assume supervision over wages and hours. Industry will then be regulated through political power by the Federal Government.

The text of the Act defining the broad powers of the Administrator is similar to the authority invested in the administrator of the old N.R.A. and is as follows: "There is hereby created in the Department of Labor a Wage and Hour division which shall be under the direction of an Administrator, to be known as the Administrator of the Wage and Hour Division. The Administrator shall be appointed by the President, by and with the advice and consent of the Senate, and shall receive compensation at the rate of $10,000 a year.

"The Administrator may, subject to the civil-service laws, appoint such employees as he deems necessary to carry out his functions and duties under this Act and shall fix compensation in accordance with the Classification Act of 1923, as amended. The Administrator may establish and utilize such regional, local, or other agencies, and utilize such voluntary and uncompensated services, as may from time to time be needed. Attorneys appointed under this section may appear for and represent the Administrator in any litigation, but all such litigation shall be subject to the direction and control of the Attorney General. In the appointment, selection, classification, and promotion of officers and employees of the Administrator, no political test or qualification shall be permitted or given consideration, but all such appointments and promotions shall be given and made on the basis of merit and efficiency."

"The principal office of the Administrator shall be in the District of Columbia, but he or his duly authorized representatives may exercise any or all of his powers in any place. The Administrator shall submit annually in January a report to the Congress covering his activities for the preceding year and including such information, data, and recommendations for further legislation in connection with the matters covered by this Act as he may find advisable.

Section 5 covering industry committees follows: "The administrator shall as soon as practicable appoint an industry committee for each industry engaged in commerce or in the production of goods for commerce. An industrial committee shall be appointed by the Administrator without regard to any other provision of law regarding the appointment and compensation of employees of the United States. It shall designate as chairman, a like number of persons representing employees in the industry, and a like number representing employers in the industry. In the appointment of the persons representing each group, the Administrator shall give due regard to the geographical regions in which the industry is carried on.

"Two-thirds of the members of an industry committee shall constitute a quorum, and the decision of the committee shall require a vote of not less than a majority of all its members. Members of an industry committee shall receive as compensation for their services a reasonable per diem, which the Administrator shall by rules and regulations prescribe, for each day actually spent in the work of the committee, and shall in addition be reimbursed for their necessary traveling and other expenses. The Administrator shall furnish the committee with adequate legal, stenographic, clerical and other assistance, and shall by rules and regulations prescribe the procedure to be followed by the committee.

"The Administrator shall submit to an industry committee from time to time such data as he may have available on the matters referred to it, and shall cause to be brought before it in connection with such matters any witnesses whom he deems material. An industry committee may summon other witnesses or call upon the Administrator to furnish additional information to aid it in its deliberations."

In a letter sent to stockholders of the General Motors Corporation on June 13, Alfred P. Sloan Jr., chairman, said in part: "There is under consideration in the Congress a proposal to place a minimum

on wages and a ceiling on hours. The only possible way in which this proposal could accomplish its purpose is by a concurrent increase in the productivity of the works involved.*** Under the circumstances involved in the practical application of the proposal, it is inconceivable that the increased efficiency will offset the increased compensation. Therefore, the result will be deflationary as affecting the national economy in relation to its proportion of total employment. Hence it will create further unemployment. ***What we have every reason to contemplate for the future, through evolution, is a Federal bureaucracy determining, according to its own beliefs, and certainly with an eye to the political consideration, the conditions under which goods of every kind may be produced in any State, and enforcing those conditions by preventing the shipment of such goods outside the borders of any State, in the event the conditions are not complied with. This is the direct road to industrial regimentation—the substitution of the political consideration for individual enterprise. That is what industry has to contemplate."

Rouge Paper Mill Expands

DEARBORN, Mich., July 11, 1938—Expansion of paper mill facilities at the Rouge Plant of the Ford Motor Company costing $300,000 was announced today at the company's offices.

The expenditure covers a building addition 260 by 60 feet and new equipment which will increase the paper mill's capacity by about 40 per cent. The equipment is designed for the production of a new resin board developed by Ford for use as upholstery backing in car body interiors.

New equipment includes a giant paper board drier 156 feet long which is capable of drying binder board about four times as fast as any machine of its type. Although temperatures within the drier range from 235 degrees F to 300 degrees, the outside is kept cool to the touch through use of special insulating material.

A new 1825-ton hydraulic press, also being installed, is the most powerful of its kind in the paper world. It will heat the resin board to a temperature of 320 degrees and apply to it a pressure of 65 tons to the square foot. This makes the board extremely hard and water resistant.

The addition to the mill building is of concrete and steel, with two 30-foot bays of two-story construction to accommodate offices and chemical storage. Special sub-floor construction of 36-inch concrete was required in spots to support heavy tanks and machinery.

Japan to Plant Chilean Pines

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 11, 1938—Chilean pines, which grow about ten times as rapidly as native Japanese stock, are to be planted in large numbers in Japan to furnish a source of pulp for staple fiber and rayon, the Commerce Department reports. The action follows successful experiments suggested by a Japanese farmer in Chile.

Production Ratio Report

These statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES

Months	1938(c)	1937(c)	1936	1935	1934
January	63.9%	90.3%	76.1%	65.8%	.....
February	68.7%	90.1%	77.9%	70.0%	.....
March	69.6%	90.3%	76.0%	70.5%	.....
April	68.3%	92.1%	82.3%	70.0%	.....
May	69.0%	90.6%	81.6%	69.4%	.....
June	65.3%	87.3%	80.7%	72.3%	.....
July	.....	81.8%	77.3%	64.9%	.....
August	.....	82.9%	81.5%	70.9%	.....
September	.....	78.6%	80.5%	71.9%	58.2%
October	.....	73.5%	87.6%	75.6%	64.7%
November	.....	61.9%	88.0%	75.3%	61.7%
December	.....	54.5%	85.9%	71.2%	59.6%
Year Average	.....	80.6%	81.3%	70.5%	.....
First 26 weeks	67.5%	90.0%	78.7%	69.5%	.....

COMPARATIVE WEEKLY SUMMARIES

CURRENT WEEKS, 1938		CORRESPONDING WEEKS, 1937	
*May 28	71.5%	May 29	90.8%
*June 4	62.2%	June 5	85.3%
*June 11	64.5%	June 12	88.2%
*June 18	65.5%	June 19	89.2%
*June 25	67.3%	June 26	88.6%
*July 2	67.5%	July 3	85.2%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting, Current Weeks					
Ratio Limits	May 28, 1938	June 4, 1938	June 11, 1938	June 18, 1938	June 25, 1938	July 2, 1938
0% to 50%	82	131	111	109	90	73
51% to 100%	225	172	193	191	188	104
Total Mills Reporting	307	303	304	300	278	177

* Subject to revision until all reports are received.
(c) Basic capacity data have been adjusted to correspond with ratings reported by individual companies.

PAPERBOARD OPERATING RATIOS

According to reports from the National Paperboard Association, per cents of operation, based on "Inch-Hours", were as follows:

Mos.	1938 (e)	1937 (e)	1936	1935	Mos.	1938 (e)	1937 (e)	1936	1935
Jan.	55%	80%	61%	61%	July	....	67%	69%	59%
Feb.	61%	86%	67%	67%	Aug.	....	74%	75%	65%
Mar.	60%	87%	68%	67%	Sept.	....	70%	76%	69%
Apr.	57%	89%	70%	61%	Oct.	....	66%	82%	76%
May	58%	86%	68%	61%	Nov.	....	56%	79%	70%
June	....	75%	68%	65%	Dec.	....	46%	74%	60%

Week end. May 28, 1938—60%
Week end. June 4, 1938—48%
Week end. June 11, 1938—58%
Week end. June 18, 1938—51%
Week end. June 25, 1938—59%
Week end. July 2, 1938—62%

(e) Basic figures revised to include new members of the National Paperboard Assn.

Standards of Heat Exchange Institute

Heat Exchange Institute announces the publication of a new section of its Standards: Steam Jet Ejector and Vacuum Cooling Section.

Part One, "Steam Jet Ejectors", covers nomenclature, operating principles, types of assemblies, capacity and standard accessories and materials of construction.

Part Two, "Test Code for Steam Jet Ejectors", covers motive steam, condensing water, vacuum and pressure measurement, capacity measurement, performance tests, diagrammatic arrangements of apparatus for conducting various tests, standard air nozzle orifices and curves on steam flow and air water vapor mixture data.

Part Three, "Steam Jet Vacuum Refrigeration Equipment" covers nomenclature, definitions, performance, construction, standard units and special types.

Price—One ($1.00) Dollar. Copies may be secured from the office of the Secretary, C. H. Rohrbach, 90 West street, New York, N. Y.

TIGHTENING INDUSTRY'S BOLTS

CONTINUOUS CONTROL PRODUCES A BETTER

SULPHATE OF ALUMINA

Cyanamid Sulphate of Alumina is the result of the use of our own raw materials under continuous control in Cyanamid laboratories. High-grade bauxite from the Company's own mines, sulphuric acid of only the highest quality, and the purest of other materials are combined to produce a superior product. You will find its superiority evident from the first trial. Our representatives will be glad to discuss your special requirements with you and see that they are met with promptness and economy.

American Cyanamid & Chemical Corporation

30 ROCKEFELLER PLAZA, NEW YORK, N. Y.

Section of the
Technical Association of the Pulp and Paper Industry
T.A.P.P.I.

Edited by Ronald G. Macdonald, Secretary

United States Patents on Paper Making

Second Quarter, 1938

Compiled by Clarence J. West, Chairman, Committee on Abstracts and Bibliography, TAPPI

The following list of patents has been compiled from the current numbers of the Official Gazette of the United States Patent Office. Since, as a rule, only one claim is published in the Gazette, it is not claimed that the list is complete.

Copies of any of the following patents may be obtained from the U. S. Patent Office, Washington, D. C., by sending ten cents ($0.10) for each patent desired. Personal checks and postage stamps are not accepted in payment for patents. Books of coupons containing 20 or 100 coupons may be purchased for $2.00 or $10.00, respectively.

April 5, 1938

R20,687. Means for arresting dust and fluff from machines or appliances for cutting paper and other fibrous materials. Thomas Hamilton Grozier, Greenwich Point, Sydney, New South Wales, Australia. Original No. 1,986,726, dated Jan. 1, 1935. Application for reissue Dec. 11, 1936. 8 claims. (Cl. 164-60).

2,112,862. Method of and means for producing matchbooks. Joseph Peyser, Mount Vernon, N. Y. Filed March 15, 1935. 9 claims. (Cl. 93-2).

2,112,898. Roofing. George Knapp, assignor to Certain-Teed Products Corporation, New York, N. Y. Filed April 9, 1930. 15 claims. (Cl. 108-7).

2,112,963. Washcloth, dishcloth, or the like. Harold H. Jones, assignor to Kalamazoo Vegetable Parchment Company, Parchment, Mich. Filed May 20, 1937. 4 claims. (Cl. 15-208). A sheet of creped parchment paper having a plurality of perforations spaced to permit the free passage of water when the sheet is crumpled together.

2,112,999. Conditioning of cellulose fiber for conversion into cellulose acetate. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed May 2, 1936. 17 claims. (Cl. 260-101). Cellulose fiber is treated with a mixture of hydrogen peroxide and acetic acid before acetylating.

2,113,034. Starch sizing of paper. Ben W. Rowland and Jordan V. Bauer, assignors to Stein, Hall Mfg. Co., Chicago, Ill. Filed June 5, 1935. 5 claims. (Cl. 92-21). An alkaline dispersion of a tough starch produced by treating a raw starch with formaldehyde and an acid catalyst and, prior to the papermaking operation, adding sufficient acidic material to the furnish to precipitate said starch upon the fiber in finely divided form is used.

2,113,052. Box making machine. Clayton Kemp, assignor to Kieckhefer Container Company, Delair, N. J. Filed Nov. 30, 1936. 19 claims. (Cl. 93-42).

2,113,058. Process for roasting ores. Edwin J. Mullen, assignor to General Chemical Company, New York, N. Y. Filed Nov. 26, 1937. 10 claims. (Cl. 75-9). A method of producing sulphur dioxide by roasting course metal sulphide ores.

2,113,078. Art of wrapping toilet paper and the like. Samuel J. Campbell, Green Bay, Wis. Filed July 17, 1936. 15 claims. (Cl. 93-2).

2,113,265. Method and apparatus for making joints in woven wire fabric. Edward J. Buell, Niagara Falls, N. Y., and Francis D. Martin, Niagara Falls, Ontario, Canada. Filed Jan. 18, 1936. 12 claims. (Cl. 140-3). A method of heat-sealing of a wire by interposing a strip between the ends of the fabric to be joined and applying heat at uniform velocity across the fabric.

2,113,266. Method and apparatus for making joints in woven wire fabric. Edward J. Buell, Niagara Falls, N. Y., and Frederick C. Few, Niagara Falls, Ontario, Canada. Filed Jan. 18, 1936. 10 claims. (Cl. 140-3). A method of heat-sealing fabrics by progressively lifting the opposite ends of the fabric sufficiently to admit an interposed strip, simultaneously feeding the strip and applying heat to the interposed strip.

2,113,290. Surface tester. Fred H. Benjamin, Pittsburgh, Pa. Filed Aug. 3, 1935. 2 claims. (Cl. 73-51). An apparatus for testing in paper manufacture.

2,113,297. Process and apparatus for the manufacture of paper products. Henry A. Ellis and William A. Slattery, assignors to The Philip Carey Manufacturing Company, Lockland, Ohio. Filed April 3, 1933. 19 claims. (Cl. 92-20). A rod mill treatment of pulp following the beater, the fibrous material being separated into individual fibers without materially reducing the length of the same.

2,113,298. Fibrous products. Henry A. Ellis and William A. Slattery, assignors to The Philip Carey Manufacturing Company, Lockland, Ohio. Filed April 3, 1933. 17 claims. (Cl. 92-3). A felted sheet prepared from pulp which has been treated in a rod mill; it may be impregnated with a waterproofing material.

2,113,360. Safety system for box making machines. John B. Tate, assignor to Food Machinery Corporation, San Jose, Calif. Filed Oct. 25, 1935. 16 claims. (Cl. 1-14). A drive for a box making machine.

2,113,380. Extended pigments. James B. Nichols, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del. Filed July 1, 1935. 6 claims. (Cl. 134-58). A titanium dioxide pigment or white insoluble titanates containing as an extender a fluoride of an index of refraction less than about 1.44; when used as a coating composition it has a hiding power greater than that of a similar composition containing an extender with an index of refraction greater than 1.44.

2,113,381. Extended zinc pigment. James B. Nichols, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del. Filed July 1, 1935. 6 claims. (Cl. 134-78). A non-coalesced composite pigment comprising zinc sulphide and a difficult water-soluble fluorine compound.

2,113,389. Apparatus for measuring the stiffness of flexible materials. George H. Smith, assignor to Ralph F. Taber, North Tonawanda, N. Y. Filed May 31, 1932. 7 claims. (Cl. 265-17).

2,113,423. Light sensitive paper and method of treating same. Clyde A. Crowley and George H. Goodyear, assignors to The Huey Company, Chicago, Ill. Filed April 30, 1937. 4 claims. (Cl. 95-6). A coating for blue print paper comprising a light-reducible ferric complex, a ferricyanide salt and ammonium nitrate.

2,113,431. Tissue face towel. Alma D. Milliken, Rye, N. Y. Filed Jan. 13, 1937. 3 claims. (Cl. 92-68). A tissue paper towel having a multiplicity of apertures therein resulting from the removal of portions of said towel, adapted for removing cosmetic cream from the skin.

2,113,555. Envelope machine. Abraham Novick, assignor to F. L. Smithe Machine Co., Inc., New York, N. Y. Filed Oct. 2, 1931. 16 claims. (Cl. 93-62).

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2,113,598. Method for removing and replacing knives of paper cutting machines. Emil L. Mueller, Rutherford, N. J. Filed Aug. 15, 1936. 4 claims. (Cl. 29-84).

2,113,620. Examination paper grading device (electrical). Reynold B. Johnson, assignor to International Business Machines Corporation, New York, N. Y. Filed Oct. 9, 1933. 14 claims. (Cl. 235-61.7). A machine for detecting electrically conductive marks on a sheet of paper.

2,113,644. Shingle. Armand R. Bollaert, assignor to The Lehon Company, Chicago, Ill. Filed Nov. 30, 1936. 9 claims. (Cl. 108-7). The relatively thick butt portion of the shingle contains a greater proportion of waterproofing compound per unit of area than the head portion; the butt portion has a coating of heavy comminuted material, the head lap portion, of light comminuted material.

2,113,906. Bleaching process. Edwin P. Sherman, assignor to The Geo. E. Sherman Company, Inc., Brooklyn, N. Y. Filed March 11, 1937. 4 claims. (Cl. 8-2). The cellulosic material is subjected for 10 to 20 minutes to a bath containing sodium hypochlorite and a buffer at 100-110° F., and the temperature is raised to between 140° F. and the boiling point over a period of between 12 and 45 minutes.

2,114,072. Press roll for paper making machines and the method of making same. Ralph E. Cleveland, Waterbury, Conn. Filed May 7, 1935. 3 claims. (Cl. 92-49). A metal cylinder having a sand-blasted, chromium-plated and polished surface, containing indentions in random distribution therein, and ranging in diameter from about 0.005 to 0.04 inch and in depth from about 0.002 to 0.02 inch, the chromium plating having a thickness ranging from about 0.001 to 0.01 inch.

2,114,101. Stuff treatment apparatus. James T. Coghill, assignor to The Noble & Wood Machine Co., Hoosick Falls, N. Y. Filed March 28, 1934. 2 claims. (Cl. 137-153). Feed pressure control apparatus for a conduit adapted to feed paper pulp or the like.

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2,114,393. Greaseproof impregnated article and method of preparing. Fred H. Lane, assignor to Hercules Powder Company, Wilmington, Del. Filed April 3, 1936. 6 claims. (Cl. 91-68). Paper is impregnated with a resin comprising esterified pine wood resin produced by extracting resinous wood with a coal tar hydrocarbon, evaporating the solution and extracting the residue with a petroleum hydrocarbon, giving a gasoline-insoluble resin.

2,114,411. Apparatus for the manufacture of packages. Albert Wesselman, Cincinnati, Ohio. Filed Dec. 7, 1936. 1 claim. (Cl. 93-58).

2,114,415. Art of manufacturing folded paper articles. Samuel J. Campbell, assignor of one-half to Hudson Sharp Machine Company, Green Bay, Wis. Filed April 13, 1936. 3 claims. (Cl. 164-35). A paper cutting blade.

2,114,605. Cellulose derivative manufacture. William D. Nicoll, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed Nov. 23, 1934. 8 claims. (Cl. 260-100). In preparing alkali cellulose, cotton linters are steeped in a 16 to 50 per cent aqueous caustic alkali solution containing up to 0.5 per cent of a wetting agent.

2,114,618. Process for coating fabrics. Knute F. Wallin, Brooklyn, N. Y. Filed April 29, 1935. 6 claims. (Cl. 91-68). Method of manufacture of an artificial leather.

2,114,621. Mechanism for forming containers. Robert Morris Bergstein, Cincinnati, Ohio, assignor to Edna May Bergstein and himself, as trustees. Filed July 27, 1936. 20 claims. (Cl. 93-18).

2,114,622. Hermetic package sealing. Robert Morris Bergstein, Cincinnati, Ohio, assignor to Edna May Bergstein and himself, as trustees. Filed Aug. 10, 1936. 22 claims. (Cl. 93-6).

2,114,623. Method of providing for internal atmospheric expansion of filled bags and hermetically sealing same. Robert Morris Bergstein, assignor to Edna May Bergstein and himself, as trustee, Cincinnati, Ohio. Filed March 4, 1937. 23 claims. (Cl. 93-6).

2,114,624. Bag or liner sealing device.

Robert M. Bergstein, Cincinnati, Ohio, assignor to Edna May Bergstein and himself, as trustees. Filed March 18, 1937. 25 claims. (Cl. 93-6).

2,114,625. Method of forming containers. Robert Morris Bergstein, Cincinnati, Ohio, assignor to Edna May Bergstein and himself, as trustees. Filed May 1, 1937. 21 claims. (Cl. 93-35).

2,114,809. Method of producing sized papers. Francis G. Rawling, assignor to West Virginia Pulp & Paper Company, New York, N. Y. Filed July 6, 1934. 15 claims. (Cl. 92-21). Includes the steps of thoroughly mixing in a closed vessel at a *p*H not above 7 a pulp suspension, a filler containing calcium carbonate and sizing ingredients including alum, permitting the carbonate and alum to react to a limited extent to produce carbon dioxide and preventing the escape from said mixture of substantial quantities of the carbon dioxide so generated to thereby maintain the mixture at a *p*H not above 7.0.

2,114,833. Sealing mechanism for bread wrapping machines. Donald M. Fincke, assignor to American Machine & Foundry Company, Brooklyn, N. Y. Filed Aug. 14, 1935. 21 claims. (Cl. 93-2).

2,114,985. Coating composition. Elmer B. Schuler, assignor to The Glidden Company, Cleveland, Ohio. Filed Oct. 30, 1934. 13 claims. (Cl. 91-68). An ammonia casein in water and a resin plasticizer comprising a condensation product of glycerol and boric acid.

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2,115,017. Waterproofing composition and method of preparing the same. John Herman Cardthausen, assignor to Drigard Products Corporation, New York, N. Y. Filed Aug. 14, 1935. 34 claims. (Cl. 134-11). A water-insoluble soap, a hydrogenated fat composed predominantly of glycerides of the higher fatty acids, a hydrocarbon solvent and an alcoholic dispersing agent.

2,115,172. Weatherboarding. Lester Kirschbraun, assignor to The Patent and Licensing Corporation, Boston, Mass. Filed June 11, 1931. 5 claims. (Cl. 20-5). A composition board with a surface layer of asphaltum and grits and a plurality of depressions in the surface, filled with differently colored grits.

2,115,176. Bag intucking machine. Roy N. Pierson and Leonard W. Smith, assignors to Russell-Miller Milling Company, Minneapolis, Minn. Filed Aug. 9, 1937. 34 claims. (Cl. 93-6).

2,115,281. Method of making bags. Adolph Potdevin, assignor to Potdevin Machine Company, Brooklyn, N. Y. Filed April 5, 1934. 2 claims. (Cl. 93-35).

2,115,282. Apparatus for use in connection with the making of bags. Adolph Potdevin, assignor to Potdevin Machine Company, Brooklyn, N. Y. Filed Sept. 29, 1934. 5 claims. (Cl. 112-10).

2,115,283. Apparatus for treating waxed webs. Adolph Potdevin, assignor to Potdevin Machine Company, Brooklyn, N. Y. Filed May 31, 1935. 11 claims. (Cl. 91-18). Method for effecting the continuous advance of a waxed paper web, a heating element in the path of the said travelling web for fusing the surface wax at spaced intervals and means for removing the fused wax.

2,115,345. Decalcomania transfer. Charles W. Stillwell, assignor to Dennison Manufacturing Company, Framingham, Mass. Filed Jan. 7, 1936. 6 claims. (Cl. 41-33).

2,115,539. Method of and apparatus for wrapping boxes. Ernest G. Rider, assignor to Stokes and Smith Company, Philadelphia, Pa. Filed June 20, 1936. 14 claims. (Cl. 93-54.2).

2,115,658. Drier felt. Benjamin L. Whittier, assignor to Mt. Vernon-Woodberry Mills, Inc., Baltimore, Md. Filed July 1, 1937. 5 claims. (Cl. 1939-420). A three-ply woven drier felt, comprising cotton filling, every third warp thread in the surface ply being asbestos, the remaining warp threads being cotton.

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2,115,723. Edge-notching mechanism for blank-making machines. Cutler D. Knowlton, assignor to Hoague-Sprague Corporation, Lynn, Mass. Filed July 22, 1936. 9 claims. (Cl. 93-58.4).

2,115,724. Creasing mechanism for blank-making machines. Cutler D. Knowlton, assignor to Hoague-Sprague Corporation, Lynn, Mass. Filed Aug. 27, 1936. 19 claims. (Cl. 93-58).

2,115,737. Process and apparatus for measuring running webs. Johannes Menschner, Rosswein, Germany. Filed June 12, 1934. 6 claims. (Cl. 33-129). Controlling a running web by subjecting it to a tensioning treatment, thus regulating the speed in accordance with the extent of slackness in the web.

2,115,747. Paper manufacture. Harold Robert Rafton, assignor to Raffold Process Corporation, Andover, Mass. Filed Jan. 21, 1933. 12 claims. (Cl. 34-24). A method of drying a paper web containing an alkaline filler and rosin sizing, in which the major part of the drying is effected at a temperature not exceeding 75° F.

2,115,772. Machine for molding pulp. Roy D. Heymann, assignor to Pulp Products Company, Inc., New York, N. Y. Filed June 18, 1935. 10 claims. (Cl. 92-54).

2,115,775. Bituminous compositions and process for making same. James Karr Hunt and Joseph Harrell Shipp, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed Feb. 2, 1935. 8 claims. (Cl. 91-70). Gilsonite which has been heated at 698-752° F. until the fixed carbon content has been increased 20 to 65 per cent is mixed with a soluble rosin-drying oil modified polyhydric alcohol-polybasic acid resin.

2,115,797. Waterproof compounds. Maurice Henri Belloc, assignor to Société Nobel Française, Paris, France. Filed March 2, 1936. 4 claims. (Cl. 134-13). A polyvinyl resin and a minor proportions of paraffin, natural waxes, synthetic waxes or chlorinated naphthalenes.

2,115,820. Ball mill. Frank E. Marcy, San Diego, Calif. Filed July 27, 1936. 3 claims. (Cl. 83-9). Discharge means for ball mills.

2,115,822. Measuring of running webs. Johannes Menschner, Rosswein, Germany. Filed Aug. 30, 1934. 6 claims. (Cl. 33-129). Apparatus for measuring running webs by ascertaining two measuring lengths under plane like guidance of the web and then reducing to the mean measurement.

2,115,835. Sulphate pulp process. Daniel J. Young, assignor to Young-Whitwell Gas Process Company, Tacoma, Washington. Filed Sept. 15, 1937. 3 claims. (Cl. 92-9). A method of combatting odors in the sulphate digester, in which air is removed prior to the beginning of the cooking process, separating the condensable from the non-condensable portions of the relief gases and burning and non-condensable portion.

2,115,908. Roll grinding machine and method. Cyril A. Fox, Mars, Pa. Filed June 15, 1935. 3 claims. (Cl. 51-49).

2,116,065. Coated organic materials and processes and compositions. John L. Elliott, assignor to The International Printing Ink Corporation, New York, N. Y. Filed Aug. 4, 1934. 5 claims. (Cl. 91-68). Rubber carrying a phthalic anhydride-glycerol condensation product, followed by a cellulose ester.

2,116,066. Coated materials and processes for producing the coating. John L. Elliott, assignor to The International Printing Ink Corporation, New York, N. Y. Filed April 18, 1935. 11 claims. (Cl. 91-68). A rubber and resinous material, followed by a cellulose ester, a resinous material and a plasticizer.

2,116,168. Method of and apparatus for forming a pulp web. James Fish and Arnold John Barea, assignors to Brown Company, Berlin, N. H. Filed July 11, 1933. 6 claims. (Cl. 92-45)). A breast roll, a pair of shake rails, a series of table rolls journaled on said rails, said rolls being arranged with a substantial gap in the series near the breast roll and means for vertically oscillating the rails and table rolls in the vicinity of said gap.

2,116,184. Method of moistureproofing. Edward B. Beale, assignor to Standard Oil Company, Chicago, Ill. Filed May 4, 1936. 7 claims. (Cl. 91-68). A base of regenerated cellulose and a moistureproof coating comprising 94-98 per cent paraffin wax having a melting point above 125° F. and 2 to 6 per cent of a high molecular weight product of the low temperature polymerization of isobutylene.

2,116,193. Cellulosic structure and method of preparing same. Donald E. Drew, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed March 19, 1935. 10 claims. (Cl. 91-68). To prevent shrinkage of non-fibrous, cellulosic pellicles due to the removal of moisture therefrom, which comprises treating the pellicles with a liquid containing a shrinkage-preventing agent.

2,116,198. Means for and method of making fibrous articles. Jesse B. Hawley, Geneva, Ill. Filed Feb. 12, 1934. 8 claims. (Cl. 92-57). A pressing die of resilient material.

2,116,210. Regenerated cellulose structures and method for preparing same. Edward R. McKee, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed Oct. 21, 1936. 4 claims. (Cl. 8-2). Method of bleaching regenerated cellulose with an aqueous solution of chlorine at a *p*H of less than 4.

2,116,227. Method of producing from waste sulphite lie a thickly liquid water solution of an adhesive substance. Karl Börje Winlöf, Stockholm, Sweden. Filed Feb. 3, 1937. 4 claims. (Cl. 134-23.91). Method of evaporation.

2,116,243. Chuck. Ray W. Johnson, Chicago, Ill. Filed Nov. 19, 1936. 10 claims. (Cl. 242-68). A chuck for securing paper rolls or the like to a shaft.

2,116,289. Fabric, paper, leather or the like. Thomas Lewis Shepherd, London, England. Filed March 29, 1935. 3 claims. (Cl. 91-50). Coating with a liquid coagulable material.

2,116,362. Method and apparatus for making cartons. Edward F. Ness, assignor to Morris Packaging Equipment Company, Toledo, Ohio. Filed June 22, 1936. 5 claims. (Cl. 93-39).

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2,116,511. Paper stock deinking method. Theodore Earle, Denver, Colo. Filed Dec. 22, 1934. 11 claims. (Cl. 92-13). The waste paper is subjected to an alkaline treatment, washed and then agitated in a froth flotation cell with a fatty acid for froth flotative separation of the ink particles and stock fibers.

2,116,544. Method of enhancing the wet strength of paper. Milton O. Schur, assignor to Brown Company, Berlin, N. H. Filed Aug. 4, 1936. 20 claims. (Cl. 91-70). In the impregnation of a fibrous base with aqueous albuminous binder composition, the dried impregnated base is exposed momentarily to a temperature of about 400 to 650° F. in the presence of an insolubilizing agent for said albuminous binder.

2,116,566. Bag machine. William H. Engel, assignor to Shellmar Products Company, Chicago, Ill. Filed May 18, 1933. 4 claims. (Cl. 93-19).

2,116,571. Bag manufacture. Irving Gurwick, assignor to Shellmar Products Company, Mount Vernon, Ohio. Filed May 15, 1936. 3 claims. (Cl. 93-35).

2,116,607. Packaging machine. Michael J. Milmoe, assignor to F. B. Redington Co., Chicago, Ill. Filed June 13, 1932. 58 claims. (Cl. 93-6).

2,116,763. Paper making machine. Herman L. Kutter, assignor to The Black-Clawson Company, Hamilton, Ohio. Filed July 16, 1935. 6 claims. (Cl. 92-43). A mix box having baffle means producing an abrupt change in the direction of flow and providing for downward movement of the stock toward the stuff pipe and means at a low point in the mix box for collecting air from the stock as it travels toward the stuff pipe.

2,116,768. Sizing paper. Ben W. Rowland, assignor to Institute of Paper Chemistry, Appleton, Wis. Filed Dec. 7, 1934. 3 claims. (Cl. 134-20). A dilute aqueous solution of alkali resinate is treated with about 10 to 50 per cent of soya bean casein (based on the weight of the resinate) and the mixture is allowed to stand until the casein has become dispersed and the alkali resinate has become at least partially hydrolyzed as indicated by the increasing turbidity of the solution.

2,116,771. Insulating unit. Duncan R. Seaman, assignor to Seaman Paper Company, Chicago, Ill. Filed May 29, 1935. 2 claims. (Cl. 154-44). An insulating board comprising a body of loosely felted fibrous materials having a plurality of indentations and projections upon each face, a waterproof coating upon a surface thereof which conforms to said surface and a fibrous liner adhesively united by said coating to said body.

2,116,811. Woven wire belt and method of making the same. Nelson W. Webb, assignor to Eastwood-Nealley Corporation, Belleville, N. J. Filed April 25, 1934. 30 claims (Cl. 245-10). A wire fabric, comprising fabric parts and a strand of hard metal interposed between edges of the fabric parts and having a facing of fusible metal, the end edge faces of the fabric parts engaging and having a soldered connection with opposite sides of said strand.

2,116,812. Seam-wire and method for making wire cloth seams. Nelson W. Webb, assignor to Eastwood-Nealley Corporation, Belleville, N. J. Filed May 15, 1936. 15 claims. (Cl. 245-10). A seam wire having a cruciform transverse section, said wire being composed of a relatively fusible material with a core of relatively infusible material.

2,116,828. Laminated construction and method. Ralph J. Gearson, assignor to Arvey Corporation, Chicago, Ill. Filed Feb. 20, 1936. 7 claims. (Cl. 93-36.6). A laminated sheet having a transparent lamination forming a protective external covering for one entire surface with a transparent window.

2,116,995. Packaging machine. Frederick E. Bickford, Rye, N. Y. Filed Sept. 21, 1934. 30 claims. (Cl. 93-3).

2,117,032. Doctor mechanism for rolls and cylinders. Frederick W. Lodding, Worcester, Mass. Filed July 17, 1935. 4 claims. (Cl. 92-74). A thin flexible blade providing a straight scraping edge and a member of greater stiffness than said blade for engaging the surface of said blade intermediate its edges.

2,117,092. Shingle. Kenneth S. Guiterman, Hewlett Bay Park, Hewlett, N. Y. Filed July 11, 1934. 5 claims. (Cl. 108-17).

2,117,094. Shingle. Henry B. Hutten, assignor to The Ruberoid Co., New York, N. Y. Filed March 4, 1936. 2 claims. (Cl. 108-7).

2,117,199. Moistureproof coated paper and process of making the same. Bert C. Miller, assignor to Bert C. Miller, Inc., New York, N. Y. Filed March 21, 1934. 8 claims. (Cl. 91-70). A fibrous foundation having a coating comprising a metallic soap to enhance the moistureproof character of the coating, an ester gum adapated to make the coating glossy and hard to the touch, a plasticizer and a stearic acid wax adapted to increase the moistureproof character of the coating.

2,117,200. Coated paper. Bert C. Miller, assignor to Bert C. Miller, Inc., New York, N. Y. Filed Dec. 17, 1936. 7 claims. (Cl. 91-70). A method of applying a synthetic resinous composition comprising the reaction products formed by the esterification of a polybasic acid by a polyhydric alcohol which is flexible, hard up to about 120° F., and non-blocking.

2,117,217. Dandy roll and cylinder mold and method of making same. Peter S. Sinclair, Holyoke, Mass. Filed Jan. 22, 1936. 7 claims. (Cl. 245-10). A seam for the woven wire covering of a dandy roll.

2,117,220. Machine for making box blanks. Karl Sieg, assignor to Samuel M. Langston Co.,

Camden, N. J. Filed Sept. 10, 1936. 21 claims. (Cl. 93-58.2).

2,117,222. Dandy roll and cylinder mold and method of making same. Peter S. Sinclair, Holyoke, Mass. Filed Jan. 22, 1936. 7 claims. (Cl. 245-10). A seam for woven wire.

2,117,237. Wrapping paper. George J. Brabender, assignor to Marathon Paper Mills Company, Rothschild, Wis. Filed June 28, 1937. 5 claims. (Cl. 92-3). Rancid-proof wrapping paper consisting of a sheet of paper treated with petrolatum, said sheet containing 1 to 10 per cent groundwood to retard rancidity.

2,117,256. Paper manufacture. Harold Robert Rafton, assignor to Raffold Process Corporation, Andover, Mass. Filed Nov. 18, 1933. 4 claims. (Cl. 91-68). Paper is treated with an aqueous mix made from ingredients comprising adhesive, pigment and a so-called substantially non-breaking emulsion of paraffin containing a substantially water-soluble gum.

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2,117,281. Manufacture of match books. Eugenio Bravi, assignor to Societá An. Finanziaria Fiammiferi ed Affini, Milan, Italy. Filed Aug. 9, 1935. 2 claims. (Cl. 93-2).

2,117,295. Method of and means for making receptacles. Harold S. Buckingham, assignor to American Sealcone Corporation, New York, N. Y. Filed Jan. 24, 1936. 42 claims. (Cl. 93-39.3).

2,117,355. Process of waterproofing sheet material. John Wesley Pearl, assignor to The Barrett Company, New York, N. Y. Filed Aug. 28, 1935. 1 claim. (Cl. 91-70). A four-step process of saturating and coating roofing felt with asphalt.

2,117,366. Coating material. Harold F. Saunders and Charles Donald Downs, assignors to The Sherwin-Williams Company, Cleveland, Ohio. Filed Dec. 7, 1935. 5 claims. (Cl. 134-58). A "pulped" pigment, for coating compositions, having a water content of less than two per cent and containing from 0.5 to 2 per cent of lecithin (based on the weight of the pigment).

2,117,460. Paper box making machine and method of folding. Edwin G. Staude, Minneapolis, Minn. Filed Dec. 19, 1936. 17 claims. (Cl. 93-52).

2,117,797. Photographic paper punching machine. Edward P. Flynn and George F. Robie, assignors to Eastman Kodak Company, Rochester, N. Y. Filed June 17, 1937. 8 claims. (Cl. 164-22).

2,117,840. Apparatus for face saturating porous materials in the manufacture of hard surface floor coverings. Leon E. Crew, assignor to Delaware Floor Products, Inc., Wilmington, Del. Filed Jan. 14, 1936. 2 claims. (Cl. 91-51).

2,117,841. Thickness indicator for paper making machines. Patrick J. Fitzgerald, assignor to The Fitzgerald Manufacturing Company, Torrington, Conn. Filed Sept. 19, 1935. 6 claims. (Cl. 33-172).

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2,118,035. Gumming apparatus for envelope making machines. Eugene B. Berkowitz, assignor to Baltimore Paper Company, Kansas City, Mo. Filed Dec. 26, 1935. 7 claims. (Cl. 93-62).

2,118,039. Manufacture of cellulose. Henry Dreyfus, London, England. Filed April 16, 1935. 1 claim. (Cl. 92-13). Method of purifying pulp by treating with a dilute and then a concentrated alkali solution, both of which have been prepared by heating a solution of alkali of about 10 per cent concentration with a lignocellulosic material.

2,118,074. Manufacture of cellulose. Henry Dreyfus, London, England. Filed June 23, 1936. 12 claims. (Cl. 92-11). Lignocellulosic material is subjected to treatment with a bisulphite solution, containing at most 66 parts of free sulphur dioxide for every 100 parts of combined sulphur dioxide, at a temperature between 90 and 120° C. and under a pressure which exceeds the vapor pressure of the liquid at the temperature employed by at least two atmospheres, followed by a treatment with dilute alkali under the same conditions of temperature and pressure.

2,118,152. Method of manufacturing moisture and moisture vaporproof papers. William H. Bryce, assignor to Dixie Wax Paper Company, Dallas, Texas. Filed May 8, 1935. 5 claims. (Cl. 91-68). One side of the paper is coated with wax and the opposite side is coated with wax only along opposite edges, the paper being coated with resinous material between said last mentioned wax coatings.

2,118,169. Diaper pad. Eugene D. Crouse, Washington, D. C. Filed Aug. 2, 1935. 1 claim. (Cl. 154-46). A laminated sheet of absorbent material and a sheet of moisture-resisting material.

2,118,212. Process and apparatus for coating paper. James D. MacLaurin, South Orange, N. J. Filed April 24, 1933. 19 claims. (Cl. 91-45). The liquid coating material is discharged in the form of a spray under super-atmospheric pressure.

2,118,491. Paper making method and machine. Harry A. Chuse, Madison, Wis. Filed Feb. 6, 1935. 6 claims. (Cl. 92-44). A combination of a making wire, a top wire and a series of suction boxes arranged for drawing the sheet alternately against the two wires.

2,118,549. Laminated product and process of manufacture. John D. Cochrane, Jr., assignor to The Formica Insulation Company, Cincinnati, Ohio. Filed July 20, 1933. 19 claims. (Cl. 154-2). The surface sheet is coated with a dried pigmented resin varnish (outer side) and a dried resin varnish of a different type (inner surface) to serve as a bonding agent.

2,118,719. Coating device. Sverre Frithjof Wraal, assignor to Ardecor (Products) Limited, London, England. Filed July 7, 1937. 10 claims. (Cl. 91-62.6). Device for applying colors to surfaces.

2,118,751. Paper cutter. Leon B. Wolfson, Columbus, Ga. Filed Aug. 16, 1937. 7 claims. (Cl. 242-55.5).

2,118,762. Machine for making tapered cement asbestos shingles. Arthur G. Leonard, Jr., assignor to The Lehon Company, Chicago, Ill. Filed July 3, 1936. 14 claims. (Cl. 92-41).

2,118,763. Burnishing of fiberboards. William H. Mason, assignor to Masonite Corporation, Laurel, Miss. Filed Dec. 24, 1936. 1 claim. (Cl. 92-68). Use of highly heated rollers revolving in a direction opposite that of the board travel and at a much higher rate of speed, the frictional slippage imparting a smooth, glossy, closed surface to the board.

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2,118,898. Roofing material and method of making the same. Forest W. Price, assignor to Pacific Minerals Company, Ltd., Richmond, Calif. Filed July 28, 1936. 9 claims. (Cl. 91-70). A protective coating of silica is applied to the granules covering the roofing material.

2,119,093. Wrapping machine. Wilhelm B. Bronander, Montclair, N. J. Filed June 27, 1936. 2 claims. (Cl. 93-2).

2,119,117. Method of treating cellulose. Aladar Schuller and Remi-Gustaaf Tritsmana, assignors to Gevaert Photo-Producten, N. V., Antwerp, Belgium. Filed Dec. 1, 1936. 1 claim. (Cl. 260-101). a method of compressing cellulose into a cake in a centrifugal filter and then spraying pretreating liquid while the cellulose is undergoing centrifugal action, thereby displacing the water originally contained therein.

2,119,164. Coated paper. Samuel S. Himmell, New York, N. Y. Filed Oct. 28, 1936. 8 claims. (Cl. 91-68). A coating of clay, varying from 8 to 13 pounds per 500 sheets of paper (25 x 38 inches), with white markings thereon comprising a mixture of white pigment and a smaller proportion of aluminum powder, the markings being invisible by reflected light and visible by transmitted light.

2,119,480. Covering material and process of treating same. Philip W. Codwise, assignor to Certain-Teed Products Corporation, New York, N. Y. Filed Feb. 20, 1935. 6 claims. (Cl. 91-70). A process of sizing, which comprises applying to the surface of the sheet a coating of sizing capable of setting, subjecting the coated sheet to pressure and repeating the process until the sizing has penetrated to a depth of not substantially less than 0.015 inch.

2,119,482. Laminated trimming strip and method for making same. Glen H. Huffer, assignor to Backstay Welt Company, Union City, Ind. Filed March 12, 1938. 7 claims. (Cl. 154-2). A method of treating two sheets of crepe paper cemented by a relatively inelastic, inert adhesive.

JUNE 7, 1938

R20, 752. Method of producing puffed pulp. Joseph E. Plumstead, assignor to The Jessup & Moore Paper Co., Philadelphia, Pa. Original No. 1,830,131, dated Nov. 3, 1931. Application for reissue March 23, 1933. 26 claims. (Cl. 92-13).

2,119,508. Paper coatings. Philip S. Barnhart, assignor to Westfield River Paper Company, Inc., Russell, Mass. Filed June 19, 1936. 4 claims. (Cl. 134-17). The coating comprises chlorinated rubber, resin, comprising glycerol abietate and 5-13 per cent paracoumarone, paraffin wax, a plasticizer and a solvent, forming a flexible, moistureproof, transparent and non-tacky film.

2,119,509. Coated paper. Philip S. Barnhart, assignor to Westfield River Paper Company, Inc., Russell, Mass. Filed June 19, 1936. 4 claims. (Cl. 91-68). A glassine sheet coated with a composition comprising chlorinated rubber 40-50 per cent, resin, comprising glycerol abietate and paracoumarone 25-38 per cent, paraffin wax 2-7 per cent and a plasticizer 15-21 per cent.

2,119,519. Process of bleaching cellulose. Alfred O. Bragg, assignor to Kuehne Chemical Company, Elizabeth, N. J. Filed May 22, 1935. 16 claims. (Cl. 8-2). Use of a titanium compound, in which the titanium has a valence of less than four, in the presence of an oxidized bleaching agent and water while maintaining an alkaline pH.

2,119,720. Apparatus for applying sealing material to containers. James D. Reifsnyder, assignor to Lily Tulip Corporation, New York, N. Y. Filed Feb. 2, 1935. 35 claims. (Cl. 91-46).

2,119,771. Apparatus for securing uniform Arthur E. Broughton, Neenah, Wis. Filed Sept. 16, 1935. 5 claims. (Cl. 34-48).

2,119,951. Process and apparatus for the manufacture of envelopes, bags, and similar articles. Max Duennebier, Neuwied, Germany. Filed Feb. 19, 1937. 10 claims. (Cl. 93-62).

2,119,956. Method of packaging paper. Francis S. McDonnell, Milton, Mass. Filed Feb. 3, 1937. 6 claims. (Cl. 93-2). Method of packaging paper on a skid.

2,119,980. Box machine. Walter T. Bailey, assignor to Stokes and Smith Company, Summerdale, Philadelphia, Pa. Filed May 17, 1937, 28 claims. (Cl. 93-54.2).

2,119,982. Sanitary napkin machine. John E. Blosser and Paul Burke, assignors to Weldown Company, Inc., New York, N. Y. Filed May 26,1933. 9 claims. (Cl. 154-29).

2,120,079. Automatic steam control for paper machines. Frederick A. Stickle, assignor to Stickle Steam Specialties Company, Indianapolis, Ind. Filed Oct. 2, 1936. 3 claims. (Cl. 34-48).

2,120,137. Process of making lignocellulose fiber products. William H. Mason, assignor to Masonite Corporation, Laurel, Miss. Filed May 14, 1932. 13 claims. (Cl. 92-39). A hardboard product formed by drying the sheet to a bone-dry condition and then applying pressure at 400-500° F. to consolidate and densify and impart high dry strength and high wet strength to the sheet.

2,120,214. Paper box making apparatus and method. Horace W. Gregoire, assignor to Oskar W. Wikstrom, Newton, Mass. Filed Jan. 14, 1937, 38 claims. (Cl. 93-51).

JUNE 14, 1938

2,120,278. Strip roofing with shingle effect. Kenneth S. Guiterman, Hewlett Bay Park, Hewlett, N. Y. Filed Jan. 30, 1937. 6 claims. (Cl. 108-17).

2,120,358. Device for measuring the length of fibers. John I. Hardy, Washington, D. C. Filed May 15, 1936. 3 claims. (Cl. 33-125).

2,120,404. Sample holder. John H. Graff, assignor to The Institute of Paper Chemistry, Appleton, Wis. Filed May 17, 1937. 2 claims. (Cl. 88-40). A sample holder for a microscope, useful in the examination of papers, etc.

2,120,474. Apparatus for the burning of mineral sulphides in gaseous suspension. Byron Angus Stimmel, Kenneth Duncan McBean and Graham Cruickshank, assignors to The Consolidated Mining & Smelting Company of Canada, Limited, Montreal, Quebec, Canada. Filed July 6, 1935. 1 claim. (Cl. 266-20). Apparatus for drying and subsequently burning mineral sulphides in gaseous suspension.

2,120,475. Apparatus for the burning of mineral sulphides in gaseous suspension—heat control. Byron Angus Stimmel, Kenneth Duncan McBean and Graham Cruickshank, assignors to The Consolidated Mining & Smelting Company of Canada, Limited, Montreal, Quebec, Canada. Filed May 22, 1936. 7 claims. (Cl. 266-20).

2,120,482. Jordan engine with crimped members. Archer Le Roy Bolton, assignor to John W. Bolton & Sons, Inc., Lawrence, Mass. Filed April 18, 1935. 6 claims. (Cl. 92-27). The cutting members are made of strips of metal which are flat along the bottom part and which project from the adjoining separators and are crimped along the top part and top edge.

2,120,501. Manufacture of filter tips for cigarettes. Rowland Frank May, assignor to Filter Tips Limited, London, England. Filed Oct. 31, 1935. 17 claims. (Cl. 93-1).

2,120,644. Plasterboard. Edgar Ernest Harper, assignor to Hessoline, Limited, London, England. Filed Sept. 21, 1937. 2 claims. (Cl. 72-124).

2,120,678. Bleaching and purifying process. John L. Parsons and Donald T. Jackson, assignors to Hammermill Paper Company, Erie, Pa. Filed March 30, 1936. 8 claims. (Cl. 8-108). Bleaching with chlorine is followed by the action of a chlorite and a hypochlorite.

2,120,697. Apparatus for disintegrating fibrous substances. William Finnegan, assignor to The Carborundum Company, Niagara Falls, N. Y. Filed Aug. 5, 1935. 13 claims. (Cl. 92-27). In a pulp refiner, a plug comprising a frusto-conical abrasive member of abrasive granules of approximately 14 grit size and a frusto-conical abrasive shell of abrasive granules of approximately 24 grit size around said plug.

2,120,846. Automatic reel for paper rolls. Henry A. Wise Wood, assignor to Wood Newspaper Machinery Corporation, New York, N. Y. Filed Aug. 17, 1932. 2 claims. (Cl. 242-64).

2,120,899. Method of making containers. George Arlington Moore, assignor to Humoco Corporation, Louisville, Ky. Filed July 17, 1934. 26 claims. (Cl. 93-39.1).

2,120,900. Fiber container and method of making the same. George Arlington Moore, assignor to Humoco Corporation, Louisville, Ky. Filed May 2, 1935. 34 claims. (Cl. 93-39.1). A fiber sheet with a lacquer liner is applied at the time of the shell forming operation.

2,120,901. Container. George Arlington drying of the sheet in paper making machines. Moore, assignor to Humoco Corporation, Louisville, Ky. Filed Aug. 22, 1935. 2 claims. (Cl. 93-55.1). Method of forming a joint between a

flanged and grooved end member and a side wall member.

2,120,902. Method of and means for making containers. George Arlington Moore, assignor to Humoco Corporation, Louisville, Ky. Filed Oct. 14, 1935. 9 claims. (Cl. 93-60). Method of making a flanged article from a blank.

2,120,903. Closure for containers. George Arlington Moore, assignor to Humoco Corporation, Louisville, Ky. Filed Nov. 6, 1935. 16 claims. (Cl. 93-36.5).

2,120,904. Container and method of making the same. George Arlington Moore, assignor to Humoco Corporation, Louisville, Ky. Filed Dec. 10, 1935. 9 claims. (Cl. 93-39.1). A laminated blank having a lamina of paper and a lamina of cellulose acetate intimately united by an adhesive.

2,120,905. Container. George Arlington Moore, assignor to Humoco Corporation, Louisville, Ky. Filed Jan. 30, 1936. 6 claims. (Cl. 229-44).

2,120,906. Means and method for filling and closing containers. George Arlington Moore, assignor to Humoco Corporation, Louisville, Ky. Filed April 25, 1936. 16 claims. (Cl. 226-73).

2,120,920. Machine for cutting paperboard. Orville M. Masters and Henry G. Stager, Syracuse, N. Y. Filed July 8, 1936. 11 claims. (Cl. 164-38). Machine for scoring and cutting a unit of corrugated paperboard to adapt the unit to be folded into a corner pad structure having a plurality of plies of paperboard on each side of the corner.

JUNE 21, 1938

2,121,023. Method of moistureproofing wrapping materials. Ralph T. K. Cornwell, assignor to Sylvania Industrial Corporation, Fredericksburg, Va. Filed Jan. 29, 1936. 18 claims. (Cl. 91-68). The moistureproofing composition comprises a lacquer base, a wax, a wax-blending agent and a plasticizing resin resulting from the condensation of an alkyd resin with a sulphonamidealdehyde resin.

2,121,028. Cellulosic wrapping material. Henry A. Gardner and Arnold Kirkpatrick, assignors to Monsanto Chemical Company, St. Louis, Mo. Filed June 11, 1935. 5 claims. (Cl. 91-68). The wrapping material is coated with a moisture resisting film comprising a cellulose ester and a resin compatible therewith.

2,121,053. Lining for containers and machine for and method of forming the same. Francis T. Robinson, assignor to Arkell Safety Bag Company, New York, N. Y. Filed Jan. 30, 1932. 8 claims. (Cl. 93-20). Method of forming a seam for closing one of the edges of a bag of crinkled paper.

2,121,074. Method and apparatus for digesting cellulosic material. Francis J. Dooley, Arlington, Mass. Filed May 11, 1934. 1 claim. (Cl. 92-7). A battery of digesters and means for circulating the liquor through a heat exchanger and for introducing the gas evolved from one digester into the circulating liquor of another digester.

2,121,135. Carton forming machine. John G. Vergobbi, assignor to Pneumatic Scale Corporation, Limited, Quincy, Mass. Filed Dec. 31, 1936. 7 claims. (Cl. 93-36).

2,121,275. Colloid mill. Benjamin Zober, Brooklyn, N. Y., and Thomas Garvey, Long Island City, N. Y. Filed May 3, 1935. 5 claims. (Cl. 83-7).

2,121,454. Machine for making sanitary pads. Oliver E. Teall, assignor to The Sterilek Company, Brooklyn, N. Y. Filed Nov. 13, 1933. 15 claims. (Cl. 154-29).

2,121,540. Paper manufacture. Leonard R. Growdon, assignor to K. C. M. Company, Dayton, Ohio. Filed May 1, 1934. 10 claims. (Cl. 92-40). Additional paper forming material, including mineral filler, is added to the lower side of the wet web to incorporate said material into and upon said lower side, the sheet is turned over and suction is applied to the lower side to obtain uniform distribution of the additional material in the web.

2,121,679. Floor covering. James Augustus Arvin and George Lewis Schwartz, assignors to Krafelt Corporation of America, Wilmington, Del. Filed March 7, 1935. 2 claims. (Cl. 91-70).

2,121,684. Artificial leather. Merlin Martin Brubaker and Leo Philip Hubbuch, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed June 15, 1936. 2 claims. (Cl. 91-68). Coating with cellulose nitrate and a softener comprising in chemical combination phthalic acid, a dihydric alcohol and 40 to 70 per cent by weight of the glyceride of coconut oil.

2,121,698. Device for drying the closing flaps of letter envelopes, bags, etc. Carl Hugo Jäger, Wuppertal-Elberfeld, Germany. Filed Dec. 6, 1935. 5 claims. (Cl. 93-74).

2,121,703. Cork treated paper pulp. Louis Leonard Larson, assignor to Krafelt Corporation of America, Wilmington, Del. Filed March 7, 1935. 8 claims. (Cl. 92-21). Pulp is mixed with a dispersion of comminuted cork in water containing a wetting agent and a dispersing agent.

2,121,709. Leather-like material and process of producing same. John J. Moriarty, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed March 12, 1936. 1 claim. (Cl. 91-68). Method of applying rubber cement and rubber latex in the preparation of artificial leather.

2,121,717. Method of coating fabrics and product thereof. David J. Sullivan, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed May 11, 1935. 1 claim. (Cl. 91-68). Method of applying rubber latex.

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2,121,902. Tensioning apparatus for material rolls. William E. Crist, Jr., Springfield, Ohio. Filed Nov. 19, 1936. 5 claims. (Cl. 242-75). Tensioning apparatus for unwinder.

2,121,926. Machine for closing bags. Gustaf Oerstroem, assignor to Aktiebolaget Gerh. Arehns Mekaniska Verkstad, Stockholm, Sweden. Filed Sept. 22, 1936. 9 claims. (Cl. 93-6).

2,121,951. Paper article. Kempton Clark, assignor to American Seal-Kap Corporation of Delaware, Wilmington, Del. Filed April 11, 1934. 9 claims. (Cl. 215-38). Water-repellant paper milk bottle cap.

2,122,044. Carton assembling mechanism. Henry K. Powell, assignor to President and Directors of the Manhattan Company, New York, N. Y., as trustees for Gibson Patent Containers, Ltd., a corporation of New South Wales, Australia. Filed July 16, 1936. 8 claims. (Cl. 93-55.1).

2,122,061. Multiwall bag of paper or similar material. Edgar Hoppe, assignor to St. Regis Paper Company, New York, N. Y. Filed Sept. 21, 1934. 7 claims. (Cl. 229-55).

2,122,062. Method of forming a valve bag. Edgar Hoppe, assignor to St. Regis Paper Company, New York, N. Y. Filed Dec. 2, 1936. 1 claim. (Cl. 93-35).

2,122,077. Roofing construction. Ayana L. Wall, Cleveland, Ohio. Filed July 24, 1937. 2 claims. (Cl. 108-7). Method of coating a roofing element.

2,122,173. Apparatus for mixing and re- Brown Company, Berlin, N. H. Filed Dec. 10, acting purposes. Orton B. Brown, assignor to 1935. 13 claims. (Cl. 259-3).

2,122,174. Apparatus for mixing and reacting purposes. Orton B. Brown, assignor to Brown Company, Berlin, N. H. Filed Oct. 19, 1937. 5 claims. (Cl. 259-3).

2,122,192. Roofing or sheet product. Clements Batcheller, Portsmouth, N. H. Filed Dec. 23, 1933. 7 claims. (Cl. 18-47.5). Fibers are coated with asphalt emulsion and then with bentonite and these are mixed with asbestos and cement with final pressing to a dense, hard product.

2,122,362. Control mechanism for paper making machines. Avery H. Stanton, assignor to Mason-Neilan Regulator Company, Boston, Mass. Filed April 30, 1935. 7 claims. (Cl. 34-48). Moisture control mechanism.

2,122,376. Process and apparatus for continuous drying of fiber-board under pressure. William H. Mason, assignor to Masonite Corporation, Laurel, Miss. Filed July 3, 1936. 7 claims. (Cl. 34-12). Higher pressure is applied to the sheet initially on its passage through a drier than during the remainder of the pressure application. Apparatus is specified.

Technical Association Paper XXI

The twenty-first annual series of Technical Association Papers has just been issued by the Technical Association of the Pulp and Paper Industry. It is a 580 page cloth bound volume, containing the papers presented at the fall and annual meetings held in Savannah and New York, respectively. It also contains the discussion that took place in the sessions wherein these papers were presented. In its format the volume is quite similar to that of preceding issues except that a whiter and more opaque paper is used. This has become necessary in view of the large number of illustrations that are used.

From the standpoint of the articles included the volume reflects the steady advance in the quality of papers presented at the Association meetings. In earlier days it was found important to compile the facts relating to the existing processes in the industry. This ultimately resulted in the publication of the five volumes on the Manufacture of Pulp and Paper which has recently been issued in its third edition.

The next important job was the development of standard testing methods for pulp and paper and related materials. Much progress has been made in this field and the accomplishments to date are contained in the loose-leaf binder of the Technical Association entitled Standard Testing Methods, Recommended Practices and Specifications. This work will continue for many years.

The present era of the association is devoted to the reporting of a great amount of research activity, particularly exemplified by the presentations of the Institute of Paper Chemistry and by the industrial laboratories wherein many of the graduates are now practicing.

The trend, in the future, is toward a more critical consideration of the equipment and processes used from the woods to the converter and consumer. Research in this important field could not hope to be successful without the above-mentioned work that has been carried on in the past twenty-five years of the association's existence.

Copies of Technical Association Papers are sent without charge to all members of the Technical Association and are obtainable, by others, at six dollars per copy, from the Association at 3814 Chanin Building, New York, N. Y.

E. B. Gray Sails for Europe

BOSTON, Mass., July 11, 1938—Edward B. Gray, treasurer of the S. D. Warren Company, sailed on the *Corinthia* for Europe, expecting to be away until the last of August.

Flow Measurements of Mill Wastes*

(Proposed Tentative Standards)

Report of Waste Committee, C. M. Baker, Chairman [1]

Accurate measurements of flow often constitute the most difficult problem in a white water survey. Methods adaptable to one mill or one condition may be impossible in another because of hydraulic conditions, location of sewers, piping, etc.

The five methods of measuring flows listed below offer a variety from which to select for different mill conditions. They are listed in the order of their usual preference.

1. *Weirs*—Sharp crest double-end contracted and straight-side rectangular and V-notched weirs constitute the simplest and probably the most satisfactory method of measuring flows. The limited head available in mill sewers, however, frequently limits utilization of this method.

2. *Venturi flumes*—This is a constricted flume operating somewhat upon the principle of the Venturi meter. It has the advantage of requiring a low head to operate and because of the smooth flow along the bottom there is less tendency for the accumulation of debris back of the weir. It often requires substantial reconstruction of the sewer.

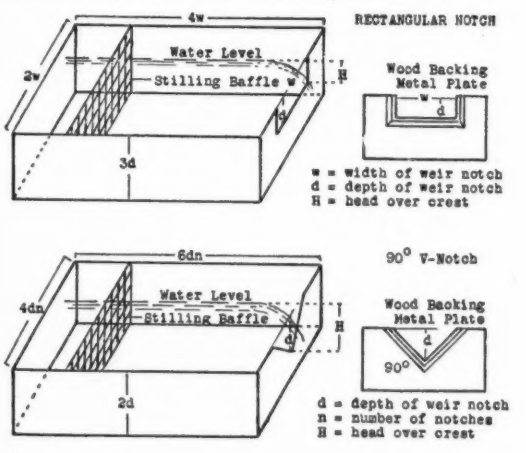
3. *Submerged weirs*—This serves the same purpose as the Venturi flume, has substantially the same advantages and is easier to construct.

4. *Orifice* A circular orifice in a metal plate slipped in between the flanges of pipes constitutes an easy meter to install. The accumulation of air or debris in the pipe line, however, may interfere with the use of this method.

5. *Water meters*—Several types of standard meters are on the market. They are usually designed for relatively clean waters, however, and often do not operate satisfactorily with mill wastes because of the debris contained in them. The Venturi meter is probably the most satisfactory of this type.

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Waldorf-Astoria Hotel, New York, N. Y., Feb. 21-24, 1938.

[1] Consulting Engineer, 2 So. Carroll Street, Madison, Wis.



Dimensions of Stilling Boxes and Weirs

Max. Flow g.p.m.	Rectangular Notch w = width	Rectangular Notch d = depth	V-Notch n = number	V-Notch d = depth
100	0' 6"	0' 6"	1	0' 6"
200	0' 9"	0' 6"	1	0' 8"
400	1' 0"	0' 8"	1	0' 10"
600	1' 6"	0' 9"	1	1' 0"
800	2' 0"	0' 9"	2	1' 0"
1000	2' 0"	0' 10"	2	1' 2"
1500	2' 0"	1' 2"	2	1' 4"

FIG. 1.

Weirs

The type and size of weirs selected will depend upon the total flow which it is necessary to measure, the head available, and local conditions with reference to space, accessibility, etc. In general, double-end contracted thin edge, rectangular or V-notch weirs are preferable. Straight side sharp crested weirs are easily installed in rectangular sewers, however, and are satisfactory providing they are kept clean and corrections are made for velocity of approach.

CONSTRUCTION OF WEIRS

Details for double-end contracted rectangular and V-notch weirs are indicated in Fig. 1. The weirs should be constructed by first cutting the rectangular or V-notch (dependent upon the type of weir selected) out of a heavy piece of metal which may be reinforced by boards cut with a bevel edge. This gives a sharp crested weir. Care must be taken to set the weir level and to prevent leaks around or under it. The head on the weir is the difference between the elevation of the crest of the weir and the quiet water above it. A suitable stilling box should be placed above the weir so as to reduce agitation to a minimum, or corrections should be made for velocity of approach. The table below Fig. 1 indicates suggested sizes of weirs for different flows.

A straight-side weir may be constructed in a rectangular sewer by providing a sharp crested dam across the sewer. The fall or drop from the crest of the weir to the water level below should be at least equal to the head upon the weir. Otherwise disturbances will result which will give incorrect reading. For permanent installations weirs located in sewers should be provided with a clean-out gate which may be opened without interfering with the crest of the weir. Fig. 2 indicates details for such an installation. If the weir itself is removed care must be taken in replacing it that the crest is level and that the elevation corresponds to the zero of the gauge.

WEIR READINGS

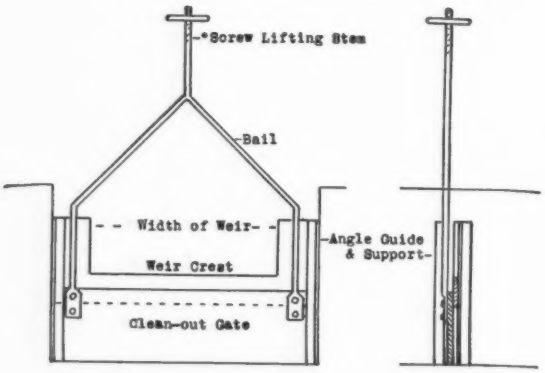
The head upon the weir may be measured by frequent observations (at least every hour and preferably every half hour or fifteen minutes) or an automatic gauge may be installed. In order to measure the flow, a zero point or base set exactly level with the crest of the weir must be placed some distance back from the weir where the water is quiet. The head upon the weir is then measured by placing the end of a rule upon this point and measuring the depth

TABLE I

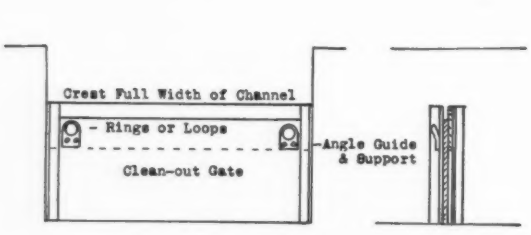
WEIR FLOWS

V-Notch by King, $Q = 2.52\ H^{2.47}$. Rectangular, 2 ends contracted, by Francis, $Q = 3.33(L - .2H)\ H^{1.5}$. Q = Flow; L = Weir Length, feet; H = Head on Crest, feet. Computed by C. M. Baker, Engr.

Head Inches	Flow, Gallons per Minute 90° V-Notch	6" Rect.	9" Rect.	Head Inches	Flow, g.p.m. 90° V-Notch
0				6	204
				1/8	215
				1/4	226
1/16		4.04	6.08	3/8	237
1/8		6.25	9.55	1/2	249
3/16		8.70	13.03	5/8	261
1/4		11.45	17.03	3/4	273
5/16		14.20	21.53	7/8	286
1		17.30	26.25	7	299
1/16		20.60	31.5	1/8	312
1/4	4.22	24.15	37.0	1/8	325
3/16	5.34	27.75	42.7	3/8	325
1/2	6.50	31.7	48.6	1/2	354
5/16	7.98	35.7	54.7	5/8	369
3/4	9.50	39.7	61.0	3/4	384
7/16	11.2	43.7	67.5	7/8	400
2	13.2	47.8	74.2	8	416
1/16	15.6	52.0	81.0	1/8	432
1/4	18.1	56.3	87.9	1/4	448
3/16	20.7	60.7	94.9	3/8	465
1/2	23.6	65.2	102.0	1/2	482
5/16	26.6	69.8	109.2	5/8	500
3/4	29.8	74.5	116.5	3/4	518
7/16	33.2	79.3	123.9	7/8	537
3	36.8	84.2	131.4	9	556
1/16	40.7	89.0	139.0	1/8	575
1/4	44.9	94.1	146.8	1/4	595
3/16	49.3	99.2	154.8	3/8	615
1/2	54.1	104.4	163.0	1/2	636
5/16	59.0	109.6	171.4	5/8	657
3/4	60.4	114.9	180.0	3/4	678
7/16	69.5	120.2	188.8	7/8	699
4	75.	125.5	197.8	10	721
1/16	81	130.8	207	1/8	743
1/4	87	136.1	216	1/4	766
3/16	93	141.4	225	3/8	790
1/2	100	146.7	234	1/2	814
5/16	107	152.0	243	5/8	838
3/4	114	157.3	252	3/4	862
7/16	122	162.6	261	7/8	887
5	130	167.9	270	11	912
1/16	138	173.3	279	1/8	938
1/4	147	178.7	288	1/4	964
3/16	156	184.1	297	3/8	991
1/2	165	189.5	306	1/2	1019
5/16	174	194.9	315	5/8	1047
3/4	183	200.3	324	3/4	1075
7/16	194	205.7	333	7/8	1103
				12	1132



Double End Contracted Weir with clean-out gate arranged so as not to disturb crest



Straight Side Weir in channel sewer. Angles do not extend above crest and loops are provided for bail

FIG. 2.
Weir Details

of the water, or a rule or gauge may be permanently placed so that observations only will be necessary.

There are several automatic recording gauges on the market which will keep a permanent record of the head upon the weir. These are preferable to observations, particularly for the main sewer or control weir where continuous daily records are to be kept. The accuracy of automatic equipment should be checked frequently by observations and the weirs must be kept free of trash and foreign material if reliable results are to be secured. It is desirable that the float or diaphragm connected with such apparatus be placed in a stilling well at the side and connected to the channel or stilling box with a small pipe or opening. This will prevent vibration and give a smoother curve on the recording sheet.

With the head H determined the actual flow in gallons per minute may be taken from Tables I and II.

Corrections for Velocity of Approach

Where there is an appreciable velocity above the weir, corrections should be made for velocity of approach. This condition prevails where adequate stilling boxes cannot be installed, particularly in mill sewers.

Where a double-end contracted weir is placed in a mill sewer so that the width of the channel of approach is not the same as the width of the weir, the diagram, Fig. 3 should be used. It will be observed from the data contained with this diagram that a trial velocity of approach must first be made

TABLE II

WEIR FLOWS

Rectangular weirs with 2 ends contracted, by Francis formula, $Q = 3.33\ (L - .2H)\ H^{1.5}$. Q = Flow; L = Length of Weir; H = Head over Crest. Computed by C. M. Baker, Engineer, APPA.

Head Inches	Flow, Gallons per Minute 1'	1½'	2'	Each Ad. ft.	Head Inches	Flow, Gallons per Minute 1'	1½'	2'	Each Ad. ft.
1/16	8.2	12.3	16.4	8.2	1/16	518	808	1097	579
1/8	12.4	18.9	25.3	12.9	1/8	532	830	1128	596
3/16	17.1	26.1	35.0	17.9	3/16	546	853	1159	613
1/4	22.4	34.1	45.7	23.3	1/4	560	875	1190	630
5/16	28.4	42.9	57.4	29.0	5/16	574	898	1221	647
1	34.9	52.9	70.9	36.0	7	588	920	1252	664
1/16	41.8	63.4	84.9	43.1	1/16	603	944	1285	682
1/4	49.1	74.4	99.7	50.6	1/4	618	968	1318	700
3/16	56.7	85.9	115.1	58.4	3/16	633	992	1351	718
1/2	64.6	97.9	131.1	66.5	1/2	648	1016	1384	736
5/16	72.7	110.2	147.6	74.9	5/16	663	1041	1418	755
3/4	81.0	122.8	164.6	83.6	3/4	678	1065	1452	774
7/16	89.5	135.8	182.1	92.6	7/16	693	1090	1486	793
2	98.2	149.1	200.0	101.8	8	708	1114	1520	812
1/16	107.1	162.8	218.4	111.3	1/16	723	1139	1554	831
1/4	116.3	176.9	237.4	121.1	1/4	738	1164	1589	851
3/16	125.8	191.4	257.0	131.2	3/16	753	1189	1624	871
1/2	135.6	206.4	277.2	141.6	1/2	768	1214	1659	891
5/16	145.7	221.9	298.0	152.3	5/16	783	1239	1694	911
3/4	156.1	237.8	319.5	163.4	3/4	798	1264	1729	931
7/16	166.9	254.4	341.8	174.9	7/16	813	1289	1764	951
3	178	272	365	187	9	828	1314	1799	971
1/16	189	289	388	199	1/16	843	1339	1834	991
1/4	200	306	411	211	1/4	858	1364	1870	1012
3/16	211	323	434	223	3/16	873	1390	1906	1033
1/2	222	340	457	235	1/2	888	1415	1942	1054
5/16	233	357	480	248	5/16	903	1441	1978	1075
3/4	244	375	505	261	3/4	918	1466	2014	1096
7/16	256	393	530	274	7/16	933	1492	2050	1117
4	268	412	556	288	10	948	1517	2086	1138
1/16	280	431	582	302	1/16	963	1543	2123	1160
1/4	292	450	608	316	1/4	978	1569	2160	1182
3/16	304	469	634	330	3/16	993	1595	2197	1204
1/2	317	489	661	344	1/2	1008	1621	2234	1226
5/16	330	509	688	358	5/16	1023	1647	2271	1248
3/4	343	529	715	372	3/4	1038	1673	2308	1270
7/16	356	550	743	387	7/16	1053	1699	2345	1292
5	369	570	771	402	11	1069	1726	2386	1314
1/16	382	591	799	417	1/16	1085	1754	2422	1337
1/4	395	611	827	432	1/4	1101	1781	2461	1360
3/16	408	632	856	448	3/16	1117	1809	2500	1383
1/2	421	653	885	464	1/2	1133	1836	2539	1406
5/16	434	674	914	480	5/16	1149	1864	2578	1429
3/4	448	696	944	496	3/4	1165	1891	2617	1452
7/16	462	718	974	512	7/16	1181	1919	2656	1475
6	476	740	1004	528	12	1197	1946	2695	1498
1/16	490	763	1035	545					
1/4	504	785	1066	562					

based upon the approximate flow from the head upon the weir. From this the accurate correction for velocity of approach may be made.

Where a straight-side weir is constructed in the sewer across its full width the diagram Fig. 4 may be used. This gives the necessary correction based upon the depth of the channel below the crest of the weir and the head upon the weir. An illustrative computation is given with the diagrams.

The Venturi Flume

As indicated above this device is useful where a limited head is available in the sewer. Furthermore, the limited restriction in the bottom tends to prevent the accumulation of sediment above the flume. It is necessary, however, that the measurements and hydraulic conditions indicated in the diagram be maintained if accurate results are to be secured. The accumulation of sediment in the bottom of the sewer and the backing up of water to form a head below will result in inaccurate measurements.

The following data regarding the Venturi flume is based primarily upon Bulletin 336, Colorado Agricultural College, "The Venturi Flume" by Ralph L. Parshall. Reference is made to that publication for further details.

The Venturi flume (Fig. 5) consists essentially of a constricted channel, and in principle operates similarly to the Venturi meter commonly used in pipe lines to measure flows of liquids. In addition to the constricted section, however, there is a depression in the bottom of the flume through the constricted section. The upper part, or approach, of the flume is set level, the depression at the throat is 4½ inches for a 6 inch flume, and 9 inches for all others. The end of the flume is placed 3 inches below the approach. Detailed dimensions are given in the dimensions table in Fig. 5.

Care must be taken both in the construction of the flume and placing it in the channel. It must be protected by rip-rap or other material to prevent washing out or channeling under or around it. The elevation of the flume above the bottom of the channel depends upon the depth of flow in the channel for

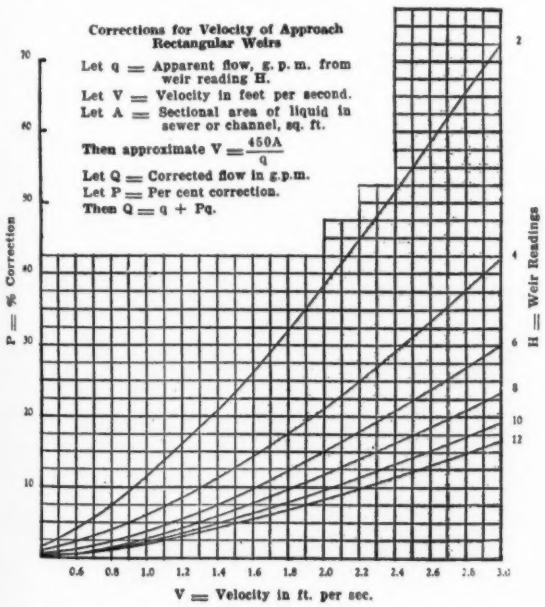

Corrections for Velocity of Approach
Rectangular Weirs
Let q = Apparent flow, g. p. m. from weir reading H.
Let V = Velocity in feet per second.
Let A = Sectional area of liquid in sewer or channel, sq. ft.
Then approximate V = 450A / q
Let Q = Corrected flow in g.p.m.
Let P = Per cent correction.
Then Q = q + Pq.
P = % Correction
H = Weir Readings
V = Velocity in ft. per sec.

FIG. 3.

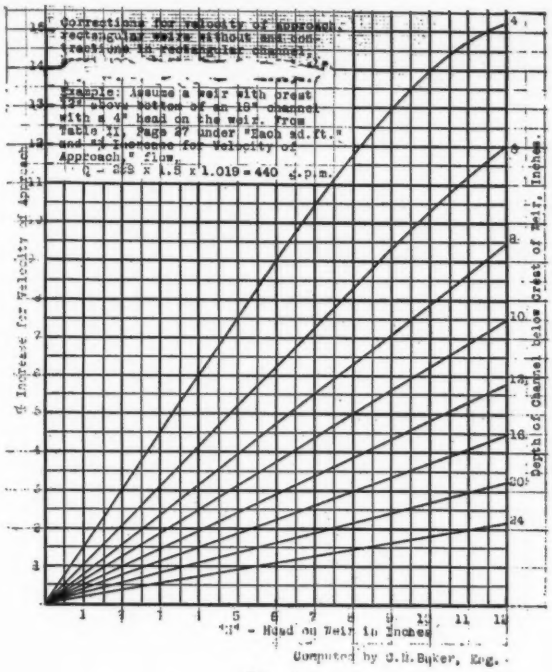
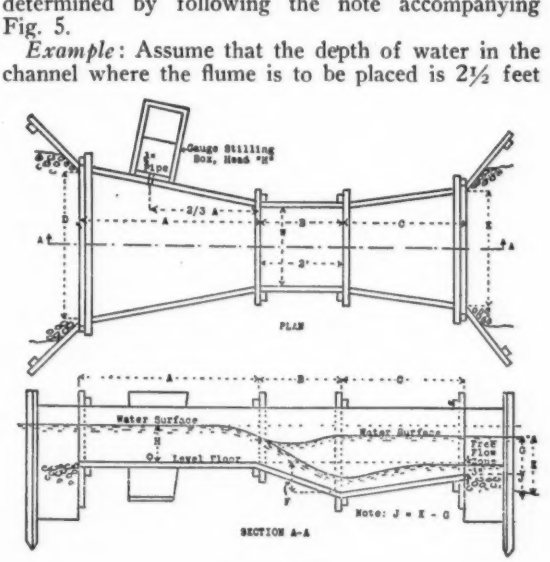

Corrections for velocity of Approach, rectangular weirs without end contraction in rectangular channels.
Example: Assume a weir with crest 12" above bottom of an 18" channel with a 4" head on the weir. From Table II, Page 27 under "Each sq.ft." and "1" Increase for Velocity of Approach" flow
Q = 2.3 x 1.8 x 1.019 = 440 g.p.m.
% Increase for Velocity of Approach
Depth of Channel below Crest of Weir, Inches
"H" = Head on Weir in Inches
Computed by J.C.Baker, Eng.

FIG. 4.
Velocity Approach Corrections, Channel Weirs

the maximum flow to be measured. This is indicated in Fig. 5 by the letter J, a distance which may be determined by following the note accompanying Fig. 5.

Example: Assume that the depth of water in the channel where the flume is to be placed is 2½ feet



DIMENSIONS

Width W	Dimensions in feet and inches A	B	C	D	E	F
6"	2' 0"	1'0"	2'0"	1' 3½"	1'3½"	0'4½"
1'	4' 5"	2'0"	3'0"	2' 9¼"	2'0"	0'9"
2'	4'11"	2'0"	3'0"	3'11½"	3'0"	0'9"
3'	5' 5"	2'0"	3'0"	5' 1⅞"	4'0"	0'9"

CAPACITIES G.P.M.

Width W	Minimum H	Minimum Discharge	Maximum H	Maximum Discharge	G
6"	1⅛"	16	12"	910	12⅝"
1'	2⅛"	130	30"	7219	26⅜"
2'	2⅝"	200	30"	14690	26⅜"
3'	2⅜"	336	30"	22530	26⅜"

FIG. 5.

for a maximum flow of 7,000 gallons per minute. Referring to the table "Capacities," Fig. 4, a flume one foot wide will be required, and the depth at the outlet of the flume G equals 26⅜ inches. By the formula J = K — G, the elevation J of the outlet of the flume above the channel equals 30 — 26⅜ = 3⅝ inches. The elevation of the approach would therefore be 3⅝ + 3 = 6⅝ inches above the bottom of the channel. The relative elevation of the approach to the outlet of the flume must be maintained, and the bottom of the flume must be level across the channel.

The head, H, is the depth of the water in the approach as measured in a stilling box connected to the flume of a ¾ inch pipe located two-thirds of the length of the approach above the crest of the constricted section. As with the weir, the head may be measured manually or by automatic recording device. With the value of H determined the flow in gallons per minute may be taken from Table III in the Appendix.

The Submerged Weir

Like the Venturi flume the submerged weir offers advantages where low heads are available and with reference to the accumulation of sediment. Accurate knowledge regarding its operation and limitations as indicated below, are necessary, if accurate results are to be secured. Revised flow data will have to be computed for cross sections and dimensions of weirs other than indicated in the diagram, Fig. 6.

The following data are based upon tests and experiments conducted at the University of Wisconsin under the direction of Graham Walton at the request of and in cooperation with the chairman of your committee. This equipment has been installed in one mill and the results checked against those from a rectangular sharp crested weir in the same sewer.

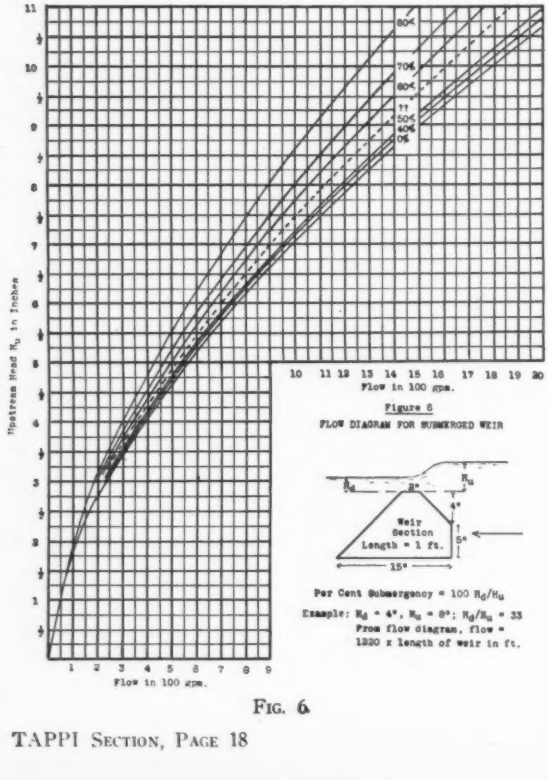


Figure 6
FLOW DIAGRAM FOR SUBMERGED WEIR

FIG. 6.

TABLE III
FLOW THROUGH VENTURI FLUME

$W^{0.026}$

6" W—Q=2.06 $H^{1.58}$ * * 1' 2' 3' W—Q=4$WH^{1.522}$
Q=Flow; W=Width of Flume; H= Upstream Head

Head Inches	Flow in gallons per minute							
	0	⅛	¼	⅜	½	⅝	¾	⅞
	Width "W" = 6"							
1	16	20	24	28	32	36	40	45
2	50	56	62	68	74	80	87	94
3	101	108	115	122	129	137	145	153
4	161	169	177	185	194	203	212	221
5	230	239	249	259	269	279	289	299
6	309	319	330	341	352	363	374	385
7	396	407	418	429	441	453	465	477
8	489	501	513	525	537	550	563	576
9	589	602	615	628	641	654	668	682
10	696	710	724	738	752	766	780	794
11	808	822	836	850	864	879	894	910
	Width "W" = 1'							
2	130	140	151	162	173	185	197	209
3	221	234	247	261	275	289	303	317
4	332	347	363	379	396	413	431	449
5	467	485	503	521	540	559	578	598
6	618	638	658	679	700	721	742	763
7	784	806	828	850	872	894	917	940
8	963	987	1011	1035	1059	1083	1107	1131
9	1155	1180	1205	1230	1255	1281	1307	1333
10	1359	1385	1412	1439	1466	1493	1520	1547
11	1574	1602	1630	1658	1686	1714	1742	1771
12	1800	1829	1858	1887	1916	1945	1974	2004
13	2034	2064	2094	2124	2154	2185	2216	2247
14	2278	2309	2340	2371	2406	2435	2467	2499
15	2531	2563	2595	2628	2661	2694	2727	2760
16	2793	2826	2859	2893	2927	2961	2995	3029
17	3063	3097	3131	3166	3201	3236	3271	3306
18	3341	3376	3411	3447	3483	3519	3555	3591
19	3627	3663	3699	3736	3773	3810	3847	3884
20	3921	3958	3995	4033	4071	4109	4147	4185
21	4223	4261	4299	4338	4377	4416	4455	4494
22	4533	4572	4611	4650	4690	4730	4770	4810
23	4850	4890	4930	4970	5010	5051	5092	5133
24	5174	5215	5256	5297	5338	5379	5421	5463
25	5505	5547	5589	5631	5673	5715	5757	5800
26	5843	5886	5929	5972	6015	6058	6101	6144
27	6188	6232	6276	6320	6364	6408	6452	6496
28	6540	6584	6629	6674	6719	6764	6809	6854
29	6899	6944	6989	7035	7081	7127	7173	7219

Head Inches	Flow in gallons per minute							
	0	⅛	¼	⅜	½	⅝	¾	⅞
	Width "W" = 2'							
2	200	223	247	272	299	327	356	385
3	415	445	475	505	535	565	595	625
4	655	689	723	757	791	825	860	895
5	930	967	1004	1041	1078	1116	1154	1192
6	1230	1270	1310	1350	1391	1432	1473	1514
7	1555	1600	1645	1690	1735	1780	1825	1870
8	1915	1963	2011	2059	2107	2155	2203	2251
9	2300	2351	2407	2453	2504	2555	2606	2658
10	2710	2764	2818	2872	2926	2980	3035	3090
11	3145	3202	3259	3316	3373	3431	3489	3547
12	3605	3665	3725	3785	3845	3905	3965	4025
13	4085	4147	4209	4271	4333	4396	4459	4522
14	4585	4650	4715	4780	4845	4910	4975	5040
15	5105	5172	5239	5306	5373	5441	5509	5577
16	5645	5714	5783	5852	5921	5990	6060	6130
17	6200	6271	6342	6413	6484	6555	6626	6698
18	6770	6843	6916	6989	7062	7135	7208	7281
19	7355	7430	7505	7580	7655	7730	7805	7880
20	7955	8031	8108	8185	8262	8339	8416	8493
21	8570	8648	8726	8805	8884	8963	9042	9121
22	9200	9280	9360	9440	9521	9602	9683	9764
23	9845	9927	10010	10090	10170	10260	10340	10420
24	10510	10590	10670	10760	10840	10930	11010	11100
25	11180	11270	11350	11440	11520	11610	11700	11780
26	11870	11960	12050	12130	12220	12310	12400	12490
27	12580	12670	12760	12850	12940	13030	13120	13210
28	13300	13390	13480	13570	13660	13750	13850	13940
29	14030	14120	14220	14310	14400	14500	14590	14690

Head Inches	Flow in gallons per minute							
	0	⅛	¼	⅜	½	⅝	¾	⅞
	Width "W" = 3'							
2	336	368	401	435	470	505	541	578
3	606	656	697	739	782	826	870	915
4	961	1008	1056	1105	1155	1206	1258	1311
5	1366	1421	1477	1534	1591	1649	1707	1765
6	1823	1882	1942	2001	2063	2126	2190	2255
7	2321	2317	2454	2520	2589	2657	2726	2795
8	2865	2935	3006	3078	3150	3223	3296	3369
9	3443	3517	3592	3668	2745	3822	3900	3979
10	4059	4139	4219	4300	4382	4464	4546	4629
11	4712	4796	4881	4967	5053	5139	5226	5313
12	5400	5487	5575	5664	5754	5845	5937	6030
13	6123	6216	6309	6403	6497	6591	6686	6781
14	6876	6972	7069	7166	7264	7362	7461	7560
15	7659	7759	7860	7961	8062	8164	8266	8369
16	8472	8576	8680	8785	8890	8996	9104	9208
17	9315	9422	9530	9639	9748	9858	9968	10030
18	10190	10300	10410	10530	10640	10750	10870	10980
19	11095	11210	11320	11440	11560	11670	11790	11900
20	12020	12140	12260	12380	12490	12610	12730	12850
21	12970	13090	13210	13340	13460	13580	13700	13830
22	13950	14080	14200	14330	14450	14580	14710	14830
23	14960	15090	15220	15350	15470	15600	15730	15860
24	15990	16120	16250	16380	16510	16650	16780	16910
25	17040	17180	17310	17450	17580	17720	17850	17990
26	18120	18260	18400	18540	18670	18810	18950	19090
27	19230	19370	19510	19650	19790	19940	20080	20220
28	20360	20500	20650	20790	20930	21080	21220	21370
29	21510	21660	21800	21950	22090	22240	22390	22530

A discrepancy of only about 1 per cent was indicated.

A cross section showing dimensions of the weir and flow diagrams is indicated in Fig. 6. Two measurements of head are necessary for submerged conditions, the upstream head, H_u, and the downstream head, H_d. From these two heads the per cent submergency, 100 x H_d/H_u, is computed. With the per cent submergency indicated on the curves and the upstream head, H_u, at the left of the diagram, the flow in gallons per day may be determined from the bottom of the diagram. For unsubmerged conditions, i.e., where the downstream level is below the crest, use the curve for 0 per cent submergency with only the upstream head, H_u.

The following conclusions based upon his studies at the University of Wisconsin were presented by Mr. Walton.

"It is important to note that when this weir is discharging under submerged conditions there are two distinct types of flow. Under the lower submergence that type of flow commonly called plunging under flow occurs: as the submergence is increased the second condition of flow, 'plunging over flow' takes place. The submergence at which this transition occurs varies considerably from about 40 per cent for low discharges to 60 per cent or more for the higher rates of flow. In most cases this change of condition of flow will take place with a submergence between 50 and 60 per cent.

"As a 5 per cent error in reading the discharge from the calibration curve will result from failure to recognize the type of flow occurring it is believed that an effort should be made to distinguish between these two conditions of flow. In a narrow range of the transition section it is sometimes difficult to determine the type of flow which controls, however, it is in most cases indicated by the direction of flow of the surface water just downstream from the crest of the weir. A match placed on the surface a foot or two below the weir's crest will flow upstream if 'plunging under' flow exists; if 'plunging over' flow it will go downstream.

"During the test it was found that there was considerable variation, as much as 0.03 foot at times, in the measurements of the downstream head taken during a single run. This is particularly true when 'plunging over' flow exists, and unless the average of several readings is taken an appreciable error will result from inaccurate information on submergence. A single reading, however, on the upstream gauge will be sufficient if the hook is mounted in a stilling chamber. The upstream gauge readings checked consistently within 0.001 or 0.002 of a foot.

"For the best results hook gauges acting in stilling chambers should be used. The stilling chamber should be connected to a channel by an opening of at least one square inch in cross-section. This opening should be made so it is flush with the side of the channel wall, as any obstruction will create a turbulence and affect the gauge readings. The upstream gauge is best placed at a distance of four times the maximum head on the crest above the weir, and the downstream gauge should be four or five feet downstream from the weir's crest to allow for recovery of velocity head. In case of channels with steep slopes these distances probably should be decreased.

"This weir is most accurate as a measuring device when the submergence is 50 per cent or less and 'plunging under' flow exists. It should never be used for this purpose when the submergence exceeds 80 per cent, and if practical, submergences bordering the transition region should be avoided. With reasonable care this weir when used in the field should give results within 5 per cent of the correct discharge."

Based upon the above discussion it is recommended that the weir be so installed that the submergency does not exceed 50 per cent. This will furnish accurate results for both submerged and unsubmerged conditions. Where the weir is of ample capacity and the submergency is due to backwater, the bottom of the sewer may be filled in or built up in the section above and below the location of the weir so as to bring the crest at a sufficiently high elevation to prevent submergency in excess of 50 per cent.

The flow formula for this type of weir is as follows:

$$Q = C\,L\left(H_u + 1.2\,\frac{V^2}{2g}\right)^{3/2}, \text{ where}$$

Q = Flow in cubic feet per second
C = Coefficient of discharge
H_u = Upstream head in feet
L = Length of weir in feet
V = Velocity in feet per second
g = Acceleration of gravity, feet per second
$1.2\,\frac{V^2}{2g}$ = Velocity head

The coefficient of discharge C will vary with different cross sections and dimensions. This coefficient must be determined by experimental data for different types of weir.

NOTE: It is planned later to develop other coefficients, C, which will permit computing data and diagrams for different size weirs.

Orifice

Where it is desired to measure the flow of liquids in a pipe line at some point in the mill, the installation of an orifice furnishes an easy method of installing a meter. Such an installation is indicated in the diagram, Fig. 7.

An orifice may be installed either at the end of a pipe line or in the line itself. Flows may be accurately computed regardless of whether the line is on a positive or negative head, that is, whether it is a vacuum or pressure line. The "vacuum leg" from a suction box or vacuum filter, however, may cause difficulty due to air accumulating in the line. The flow must be a continuous solid flow of the liquid.

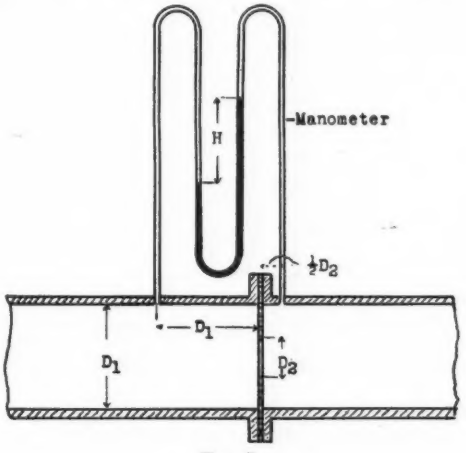


FIG. 7.
Orifice Installation

Sediment or debris in the waste may cause inaccurate reading. Furthermore, the orifices should be checked occasionally to see that they are true and not badly worn.

The following is based upon data secured from Professor Dawson of the Hydraulics Department, University of Wisconsin, (October 4, 1935).

Let V_2 = velocity through orifice
D_1 = diameter of pipe
D_2 = diameter of orifice
g = acceleration of velocity due to gravity
H = the differential head above and below the orifice
Q = flow in cubic feet per second
A_2 = area of orifice in square feet

$$\text{Then, } V_2 = \frac{\sqrt{2gH} \times .62}{\sqrt{1 - (D_2/D_1)^4}}$$

A_2V_2 or Q in gpm $= 450\ A_2V_2$

The following specifications or limitations should be observed

1. The orifice should be constructed of non-corrosive metal. The thickness of the metal should be $\frac{1}{16}$ inch or the orifice should be beveled on the downstream side so that the thickness of the metal at the orifice is $\frac{1}{16}$ inch.

2. D_2, the diameter of the orifice should not be greater than $^2/_3$ D_1, the diameter of the pipe, and preferably not less than $\frac{1}{4}$, although the upper limit is the more important.

3. The manometer connection for measuring the pressure should be located below the orifice a distance equal to $\frac{1}{2}$ D_2, and above the orifice at a distance equal to D_1. A manometer gauge with mercury as a medium should be provided for the higher heads.

4. If the orifice is to be located near an elbow or connection causing disturbance in the flow a quieting vane or baffle consisting of metal plates forming a cross at right angles should be placed longitudinally in the pipe above the orifice extending for a distance of two or three times the diameter of the pipe.

In Table IV are presented data for computing flows through orifices dependent on

1. Determination of the area of the orifice, A. This may be taken directly from the table opposite the diameters indicated in the first column.

TABLE IV.—FLOW THROUGH ORIFICES
Flow in g.p.m. = A × B × C

1		2		3	
Diam. D_2 inches	A	Head Ft.	In.	B	D_2/D_1	C
0	.0014	0	1	2.31	.25	279
	.0031		2	3.28		
1	.0055		3	4.01	.30	280
	.0085		4	4.63		
	.0123		5	5.18	.33	281
	.0167		6	5.67		
2	.0218		7	6.13	.40	283
	.0276		8	6.55		
	.0341		9	6.95	.50	288
	.0413		10	7.32		
3	.0491		11	7.67	.60	299
	.0576	1		8.02		
	.0668		3	8.97	.67	311
	.0767		6	9.82		
4	.0873		9	10.61	.70	320
	.0985	2		11.34		
	.1104		3	12.03		
	.1231		6	12.68		
5	.1367		9	13.30		
	.1503	3		13.89		
	.1650		6	15.00		
	.1803	4		16.04		
6	.1963		6	17.01		
	.2131	5		17.93		
	.2304		6	18.81		
	.2485	6		19.64		
7	.2673		6	20.45		
	.2867	7		21.21		
	.3067		6	21.96		
	.3276	8		22.68		
8	.3491		6	23.38		
	.3712	9		24.06		
	.3941	10		25.36		
	.4176	12		30.01		
9	.4418	14		27.78		
	.4667	16		32.08		
	.4922	18		34.03		
	.5185	20		35.87		
10	.5454	25		40.10		
	.5729	30		43.93		
	.6009	40		50.72		
	.6294	50		56.71		

Example
Pipe Diam. D_2 = 12"
Orifice Diam. D_1 = 4"
Head, "H" = 10'
Then "A" = .0873
"B" = 25.36
"C" = 281
Flow = .0873 × 25.36 × 281 = 621 g.p.m.

2. Determination of $\sqrt{2gH}$ B which may be taken from the diagram opposite the heads indicated.

3. Determination of the following factor

$$C = .62 \times 450 \times \sqrt{\frac{1}{1 - (D_2/D_1)^4}}$$

This factor is based upon the ratio of D_2D_1 which may be computed and factor C determined.

With the above data the flow in gallons per minute equals the product of 'A,' 'B,' and 'C.'

Results of Beloit Horizontal Dual Presses Operating on Various Grades of Paper*

By C. E. Macklem[1]

The Beloit Horizontal Dual Press originally installed on sulphite, book and bond papers at Niagara Falls is now in successful operation on practically every grade of paper from coast to coast. At present there are sixteen of these presses in operation and a dozen are in the process of construction. This has been accomplished in less than two years, indicating that this new type press has been definitely approved by the paper industry.

The design and operation of the Beloit horizontal dual press have been discussed at various meetings and several papers have been presented on this subject; thus it is assumed that you are familiar with this press. Motion pictures will be shown to illustrate this press in operation in two different mills. The purpose of this paper is to outline briefly the results which have been accomplished from the various installations on a wide variety of papers.

One of the earlier horizontal dual press installations was made at the Monarch Division of Allied Paper Mills, Kalamazoo, Mich. This particular machine makes a wide range of papers including some very fine grades of sulphite printing sheets. Some of the stock is subsequently coated. In this application

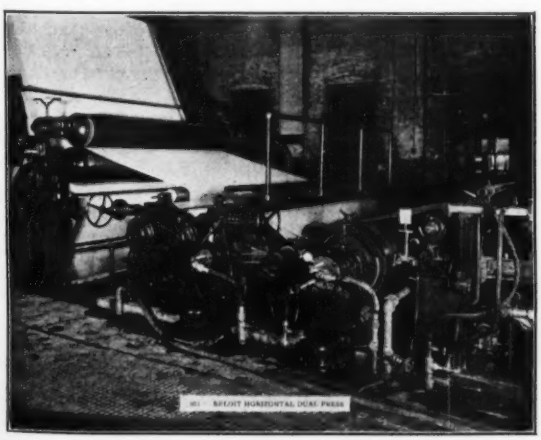
* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Waldorf-Astoria Hotel, New York, N. Y., Feb. 21-24, 1938.
[1] Member TAPPI. Sales Engineer, Beloit Iron Works, Beloit, Wis.

it was naturally essential to secure the best possible finish on both sides of the sheet and to have both sides as nearly uniform as possible. At the same time the horizontal dual press was installed, a new fourdrinier with Beloit slice and Beloit high speed shake was also installed and the space made available by substituting the horizontal dual press for the conventional presses was used for the addition of four paper driers. The new press equipment was similar to the original Niagara Falls installation in that the first roll is a Beloit rubber covered suction roll, the center roll a Stonite covered roll and the third roll a plain rubber covered roll.

After the new equipment was put into service, it was noted that the improvement in finish had somewhat exceeded our expectations. As an example, on one grade where there was formerly a difference between the two sides of 100 points, there is now only 20 points difference between the top and bottom sides, and the new values are in a materially higher range. This improved finish is obtained with one stack of calenders as compared with two stacks before the installation. No doubt the new slice and high speed shake of the fourdrinier part contributed toward this improvement. However, the gentler action of the horizontal dual press is considered of great importance because the sheet is not subject to as drastic action as in the old press equipment. Another factor is that the sheet goes to the smoothing press in a much drier state and the smoothing press can therefore be used to better advantage.

The increase in moisture removal from this press installation closely parallels the experience of the original installation at Niagara Falls where they have since installed a second unit. It is safe to say that we have gained from 2 to 3 per cent in dryness. As an example, one sheet which formerly ran 35 per cent dry after the presses, is now 38 per cent dry, and some other sheets are showing greater improvement. A 3 per cent improvement in this range of moisture content means a 13 per cent reduction in water to be evaporated on the driers.

The operators at this mill have considered the horizontal dual press part of their recent installation can be credited with increasing production by about 15 per cent. Part of this increase is due to the elimination of at least four press breaks per day. It has been estimated that the press section now requires less power and the felt costs have shown a gratifying drop. A second Beloit horizontal dual press is now being installed in their mill.



Beloit Horizontal Dual Press

Not far from the Allied installation is a Beloit horizontal dual press at the Otsego Falls Paper Company making a very good grade of fourdrinier straw board. This was the first horizontal dual press to operate on heavier weight sheets and this fact together with the known peculiarities of straw stock occasioned a particular interest in the results obtained. Those of you who have been involved in or come in contact with straw operation appreciate that the wet sheet is very tender and press pick-ups are a major problem, and that an excess of lime is usually present in the stock causing its own problems in machine operation. Because of the lime deposit problem the suction roll of the horizontal dual press was not rubber covered, this to reduce the length of hole in the suction roll shell and to facilitate cleaning operations when an accumulation has occurred in the holes. The center roll of the press was accordingly provided with a rubber cover and the third roll with a cover of bronze. In line with general experience the center roll cover was of rather soft rubber stock, this to avoid picking troubles, and under these conditions the single felt arrangement is used, the sheet from the suction couch being transferred to the felt and the sheet and felt passing in turn through both press nips. The history of this installation was sent to us by one of the executives of the Otsego Falls Paper Company.

For two months after the new press was installed the machine was operated without the additional driers in the space made available by the compact arrangement of the press part. During this interval the steam pressure on the driers was 22 pounds. This in comparison with the 30 pounds pressure that prevailed previously. The speed maintained was at the same time about 12 per cent higher. With the conventional press arrangement it was not uncommon to have from 15 to 24 press breaks in a 24-hour interval, whereas after the horizontal dual press went into operation breaks at the press section were almost entirely eliminated. Due to the increased speed and freedom from breaks, the actual production of the machine increased 19 per cent.

Subsequently, additional paper driers were installed in the 15-foot space made available by the new press and further increases in production have been made. Comparing two similar periods before and after the improvements were made, the production figures were about 5400 tons before the change and 6800 tons after. Also the felt costs were only 38 per cent of the previous figure in spite of the higher speeds and greater production.

Another of the earlier horizontal dual press installations was made at Flambeau Paper Company, Park Falls, Wis. Their machine makes a wide range of papers from light weight sulphite manifold to very heavy sulphite and ground wood content sheets. This was the first installation for ground wood sheets. About seven months after the new press was put into operation, a check on the average operation during that period showed the machine to be running approximately 20 per cent faster than before. On an especially light weight manifold a record of 40 hours continuous operation without a break was made. The total production figures show a gain over the increase in production in proportion to the speed due to this safer operation, and due to the fact that the sheet from the horizontal dual press is at least as dry as it formerly was from

the third press. The machine crew finds it much easier to handle the sheet into the smoothing press and driers. Two draws in the press section have been eliminated. A comparison of power consumption figures shows a monthly saving of approximately 4500 k.w.

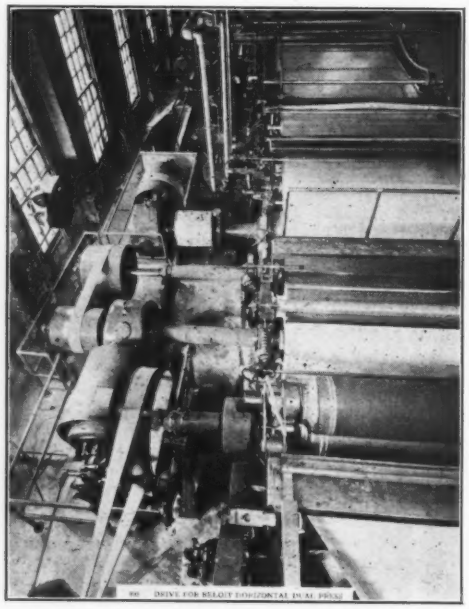
The Beloit horizontal dual press is represented on the West Coast by the installation in the mill of Longview Fibre Company, Longview, Wash. Kraft wrapping and butcher paper is made on this machine together with various sulphite wrapping, bag papers and toweling. In this instance the new press arrangement made room for the installation of a longer wire on a new Beloit Removable Fourdrinier and the addition of several driers. A very gratifying increase in speed and much safer operation has been reported.

Consolidated Water Power and Paper Company have a horizontal dual press operating on one of the new machines at Wisconsin Rapids making their very successful machine coated paper. Due to the various conditions prevailing we feel that this is a very exacting service and were pleased to build a similar press section for the new machine recently installed also on machine coated paper.

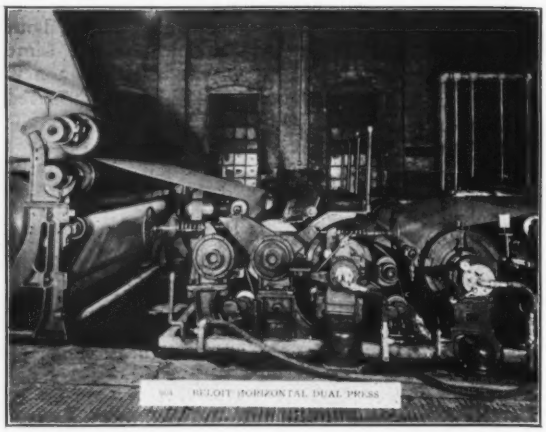
Nekoosa-Edwards Paper Company are operating a horizontal dual press on their No. 3 machine in the Nekoosa mill. Installed in about one-quarter of the space formerly occupied by press equipment, the horizontal dual press permitted the addition of eight paper driers. The more effective moisture removal at the press plus the additional driers so reduced the back pressure that the machine could be carried up 50 feet in top speed. So far an increase of about 10 per cent in production has been shown and this with a reduction in cockling troubles formerly experienced. Due to the reduction in the stretch of the sheet at the press section, there has been an improvement in the machine trim.

Kimberly Clark Corporation have one horizontal dual press in operation and two more are scheduled for installation in the very near future.

In the more unusual papers, Rhinelander Paper



DRIVE FOR BELOIT HORIZONTAL PRESS



BELOIT HORIZONTAL DUAL PRESS

BELOIT HORIZONTAL DUAL PRESS

Company have recently installed the horizontal dual press on glassine and greaseproof papers in their No. 5 machine and the Paterson Parchment Company are making parchmentizing stock with one of these horizontal dual presses in Bristol, Pa.

Eastman Kodak Company will soon have a horizontal dual press on their photographic papers.

An interesting report was received in connection with the recent starting of a horizontal dual press for the Oxford Paper Company, at Rumford Maine; although the operators had no previous experience with this press arrangement, they were able to put on both felts and turn the new press over all in one hour's time. Only a few minutes were lost in carrying the sheet over on the first attempt. We felt that this illustrated very well the simplicity and workability of the horizontal dual press arrangement. A second horizontal dual press unit is now being built for this mill.

On kraft papers the Thilmany Pulp and Paper Company have a horizontal dual press in operation at Kaukauna, Wis., and the Gulf States Paper Corporation recently started up an installation in connection with their machine rebuild at Tuscaloosa, Ala.

The Beloit horizontal dual press is well represented in the new mills installed in the south. In the Georgetown mill of the Southern Kraft Corporation, two of these new presses are operating on 212 inch fourdrinier machines These are the first complete new machines to be so equipped. Designed for high speed on heavy weight board, these presses consist of two large rubber covered Beloit suction press rolls, one mounted on either side of a large diameter bronze center roll. No operating data has yet been released but it is evident from the way these new machines came promptly up to performance expectations after starting that the press sections were functioning in commendable fashion. There will be two more horizontal dual presses in the new Springhill, La., mill of Southern Kraft Corporation and this company has scheduled another for one of its other southern mills. The St. Joe Paper Corporation will install one in its new machine at Port St. Joe, Fla.

In the course of the development of the horizontal dual press thus far we are very pleased to have had the opportunity of installing the new presses on such a wide variety of sheets and are of course very grateful to the industry for the cordial response received.

Imports of Paper and Paper Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports, of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

NEW YORK IMPORTS

WEEK ENDING JULY 9, 1938

SUMMARY

Cigarette paper .....533 cs.
Wall paper .....3 cs.
Newsprint .....5759 rolls, 61 pkgs.
Wrapping paper .....730 rolls, 1 cs.
Packing paper .....100 bls.
Drawing paper .....41 cs.
Filter paper .....6 cs.
Surface coated paper .....61 cs.
Metal covered paper .....35 cs.
Decalcomanias .....5 cs.
Colored paper .....2 cs.
Miscellaneous paper .....2 cs.
Wall board .....3 cs.
Printing paper .....298 rolls, 34 cs., 160 bls.
Basic paper .....10 cs.
Stencil paper .....1 cs.
Paper Tubes .....138 cs.

CIGARETTE PAPER

R. J. Reynolds Tobacco Co., *Pr. Harding,* Havre, 130 cs.
De Mauduit Paper Corp., *Pr. Harding,* Havre, 200 cs.
Van Oppen & Co., *Pr. Harrison,* Marseilles, 1 cs.
De Mauduit Paper Corp., *Ile de France,* Havre, 2 cs.
Champagne Paper Corp., *Ile de France,* Havre, 200 cs.

WALL PAPER

——, *Kunikawa Maru,* Yokohama, 1 cs.
——, *Europa,* Bremen, 2 cs.

WALL BOARD

H. G. Craig Co., Inc., *G.D.D.,* Donnacona, 436 crates.

NEWSPRINT

N. Y. Evening Journal, *Pr. Harding,* Hamburg, 181 rolls.
Jay Madden Corp., *Pr. Harding,* Hamburg, 254 rolls.
Perkins Goodwin & Co., *Pr. Harding,* Hamburg, 295 rolls.
H. G. Craig Co., Inc., *G.D.D.,* Donnacona, 237 rolls.
H. G. Craig Co., Inc., *Donpaco,* Donnacona, 489 rolls.
H. G. Craig Co., Inc., *A.C.D.,* Donnacona, 326 rolls.
International Paper Co., *G.T.D.,* Gatineau, 365 rolls.
N. Y. Evening Journal, *Markland,* Liverpool, N.S., 191 rolls.
N. Y. Tribune, *Markland,* Liverpool, N.S., 1213 rolls.
World Telegram, *Markland,* Liverpool, N.S., 570 rolls.
Brooklyn Daily Eagle, *Markland,* Liverpool, N.S., 610 rolls.
Herald Statesman, Inc., *Markland,* Liverpool, N.S., 56 rolls.
N. Y. Post, *Markland,* Liverpool, N.S., 820 rolls.
Parsons & Whittemore, Inc., *Clare H. Stinnes,* Sundsvall, 61 pkgs.
Perkins Goodwin & Co., *Deutschland,* Hamburg, 264 rolls.
Jay Madden Corp., *Deutschland,* Bremen, 371 rolls.
Jay Madden Corp., *Manhattan,* Hamburg, 376 rolls.
N. Y. Evening Journal, *Manhattan,* Hamburg, 180 rolls.

PRINTING PAPER

Parsons & Whittemore, Inc., *Pr. Harding,* Hamburg, 198 rolls, 120 bls.
Jay Madden Corp., *Pr. Harding,* Hamburg, 100 rolls, 40 bls.
Burroughs Wellcome & Co., *American Banker,* London, 6 cs.
L. A. Consmiller, *Europa,* Bremen, 28 cs.

WRAPPING PAPER

A. Bleyer & Co., *Manhattan,* Hamburg, 1 roll.
Walker Goulard Plehn Co., *Manhattan,* Hamburg, 138 rolls.
Jay Madden Corp., *Manhattan,* Hamburg, 591 rolls.
Keller Dorian Paper Co., *Exochorda,* Marseilles, 1 cs.

PACKING PAPER

J. P. Heffernan Paper Co., *Exochorda,* Genoa, 100 bls.

DRAWING PAPER

H. Reeve Angel & Co., Inc., *American Banker,* London, 6 cs.
Keuffel & Esser Co., *Manhattan,* Hamburg, 35 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., *American Banker,* London, 6 cs.

SURFACE COATED PAPER

Gevaert Co., of America, *Westernland,* Antwerp, 51 cs.
C. Happel, *Deutschland,* Hamburg, 10 cs.

METAL COVERED PAPER

Winter Wolff & Co., *Manhattan,* Hamburg, 35 cs.

BASIC PAPER

Globe Shipping Co., *Deutschland,* Bremen, 10 cs.

DECALCOMANIAS

Sellers Transportation Co., *Europa,* Bremen, 5 cs.

COLORED PAPER

D. C. Andrews & Co., *Europa,* Bremen, 1 cs.
E. Hennigson & Co., *Europa,* Bremen, 1 cs.

STENCIL PAPER

American Express Co., *Westernland,* Antwerp, 1 cs.

PAPER TUBES

——, *Deutschland,* Hamburg, 183 cs.

MISCELLANEOUS PAPER

Heemsoth Kerner Corp., *Deutschland,* Bremen, 2 cs.

RAGS, BAGGINGS, ETC.

W. Steck & Co., *Olga S.,* Antwerp, 288 bls. flaxwaste.
Loumar Textile By Products, Inc., *Laconia,* Liverpool, 4 bags paperstock.
——, *Laconia,* Liverpool, 32 bls. old strings.
Hughes Fawcett, Inc., *California,* Glasgow, 8 bls. flaxwaste.
Irving Trust Co., *Pr. Harrison,* Bombay, 50 bls. cotton waste.
Stern Corp., *Pr. Harrison,* Bombay, 100 bls. cotton waste.
D. S. Stern Co., *Pr. Harrison,* Bombay, 600 bls. cotton waste.
Irving Trust Co., *American Importer,* Belfast, 10 bls. threadwaste.
D. M. Hicks, Inc., *Guido,* Hull, 153 bls. old linen rags.
——, *Kim,* Leningrad, 82 bls. rags, 10 bls. waste, 457 bls. linen and cotton cuttings, 97 bls. linen rags and waste.
Banco Coml. Italiane Trust Co., *Kim,* Leningrad, 555 bls. waste, 79 bls. linen rags, 56 bls. rags.
Chase National Bank, *Kim,* Leningrad, 253 bls. linen rags, 18 bls. linen rags and waste, 82 bls. waste, 108 bls. rags, 792 bls. linen and cotton cuttings.
Amtorg Trading Corp., *Kim,* Leningrad, 103 bls. cotton cuttings.
Irving Trust Co., *Liberty,* Leith, 201 bls. bagging.
Castle & Overton, Inc., *Liberty,* Dundee, 77 bls. paperstock.
Wertheimer Bag Co., *Fort Amherst,* Halifax, 111 bls. bagging.
Irving Trust Co., *Wales Maru,* Bombay, 171 bls. cotton waste.
R. Blank, *Exochorda,* Alexandria, 74 bls. old cottons.
E. J. Keller Co., Inc., *Exochorda,* ——, 133 bls. rags.

HIDE CUTTINGS

American Express Co., *Laconia,* Liverpool, 50 bls.
——, *Laconia,* Liverpool, 758 bags.

OLD ROPE

W. Steck & Co., *Olga, S.*, Rotterdam, 40 coils.
W. Steck & Co., *Guido*, Hull, 55 coils.
Van Oppen & Co., *Black Eagle*, Rotterdam, 2 bls.
Van Oppen & Co., *Black Eagle*, Antwerp, 51 bls.
G. W. Millar & Co., Inc., *Toronto City*, Bristol, 80 coils.

WOOD PULP

Bulkley Dunton Pulp Co., Inc., *Pr. Harding*, ——, 553 bls. woodpulp, 113 tons.
Absorbo Beer Pad Co., *Saturnia*, Trieste, 983 bls. woodpulp.
Bulkley Dunton Pulp Co. Inc., *Clare H. Stinnes*, ——, 1275 bls. sulphite, 255 tons, 1350 bls. sulphate, 270 tons.
Johaneson Wales & Sparre, Inc., *Clare H. Stinnes*, Obbola, 3500 bls. sulphate, 500 tons.
Brown Bros., Harriman & Co., *Clare H. Stinnes*, Hernosand, 4200 bls. sulphate, 4850 bls. sulphite.
——, *Clare S. Stinnes*, Hernosand, 3210 bls. sulphate.
Johaneson Wales & Sparre, Inc., *Clare H. Stinnes*, Sundsvall, 3210 bls. sulphite, 597 tons, 450 bls. sulphate, 25 tons.
Bulkley Dunton Pulp Co., Inc., *Clare H. Stinnes*, ——, 2070 bls. sulphite, 345 tons.
M. Sone, *Deutschland*, Hamburg, 234 bls. wood pulp, 31 tons.
Castle & Overton, Inc., *Deutschland*, Hamburg, 840 bls. woodpulp, 168 tons.
——, *Deutschland*, Bremen, 1100 bls. wood pulp, 226 tons.
M. Sone, *Heddernheim*, Hudiksvall, 2400 bls. wood pulp.

WOOD PULP SHEETS

——, *Deutschland*, Bremen, 40 cases, 5 tons.

ALBANY IMPORTS

WEEK ENDING JULY 9, 1938

Johaneson Wales & Sparre, Inc., *Clare H. Stinnes*, Sundsvall, 1660 bls. sulphite, 285 tons.
Bulkley Dunton Pulp Co., Inc., *Clare H. Stinnes*, ——, 3500 bls sulphite, 700 tons.

PORTLAND IMPORTS

WEEK ENDING JULY 9, 1938

Price & Pierce, Ltd., *Alssund*, ——, 600 bls. sunbleached sulphite, 300 bls. unbleached sulphate.
M. Sone, *City of Flint*, Hamburg, 2575 bls. wood pulp.
Pagel Horton & Co., Inc., *Alssund*, Sweden, 2500 bls. wood pulp.

BOSTON IMPORTS

WEEK ENDING JULY 9, 1938

——, *Black Eagle*, Antwerp, 109 bls. rags, 15 bls. cotton waste.
E. Butterworth & Co., Inc., *Black Eagle*, Antwerp, 53 bags gluestock.
American Express Co., *Black Eagle*, Antwerp, 4 cs. stencil paper.
Price & Pierce, Ltd., *Alssund*, ——, 3300 bls. unbleached sulphite, 1710 bls. unbleached sulphate.
M. Sone, *Aachen*, Hamburg, 508 bls. wood pulp.
Gottesman & Co., Inc., *Alssund*, Sweden, 1350 bls. unbleached sulphite, 500 bls. bleached sulphite.
Gottesman & Co., Inc., *Heddernheim*, Sweden, 500 bls. bleached sulphite.
Pagel Horton & Co., Inc., *Alssund*, Sweden, 825 bls. wood pulp.

PHILADELPHIA IMPORTS

WEEK ENDING JULY 9, 1938

——, *Wales Maru*, Karachi, 500 bls. glue stock.

NORFOLK IMPORTS

WEEK ENDING JULY 9, 1938

——, *Wales Maru*, Bombay, 303 bls. rags.

ORANGE IMPORTS

WEEK ENDING JULY 9, 1938

Pulp Sales Corp., *Uddeholm*, Viipuri, 5080 bls. sulphite.

JACKSONVILLE IMPORTS

WEEK ENDING JULY 9, 1938

Jacksonville Paper Co., *Uddeholm*, Kotka, 220 bls. newsprint.
Jay Madden Corp., *Uddeholm*, Kotka, 270 rolls newsprint.
The Metropolis Co., *Uddeholm*, Kotka, 257 rolls newsprint.
Virginia Paper Co., *Uddeholm*, Kotka, 100 rolls newsprint.

NEW ORLEANS IMPORTS

WEEK ENDING JULY 9, 1938

E. C. Palmer, *Uddeholm*, Kotka, 96 bls. printing paper.
Pulp Sales Corp., *Uddeholm*, Kotka, 1700 bls. sulphite.
Aurora Beacon News, *Uddeholm*, Hallstavik, 181 rolls newsprint.
Joliet Herald News, *Uddeholm*, Hallstavik, 257 rolls newsprint.
Elgin Courier News, *Uddeholm*, Hallstavik, 235 rolls newsprint.
Illinois State Journal, *Uddeholm*, Hallstavik, 518 rolls newsprint.
——, *Uddeholm*, Hernosand, 142 pkgs. newsprint.
M. Sone, *Uddeholm*, Hernosand, 4200 bls. wood pulp.

MONTREAL IMPORTS

WEEK ENDING JULY 9, 1938

Gottesman & Co., Inc., *Francois L. D.*, Sweden, 2760 bls. unbleached sulphite.
Gottesman & Co., Inc., *Norefjord*, Sweden, 2625 bls. unbleached sulphite.
Pagel Horton & Co., Inc., *Norefjord*, Sweden, 18590 bls. woodpulp.

Dexter Suit To Go To Referee

DEXTER, N. Y., June 11, 1938—An order made out last week by Supreme Court Justice *Kingsley* results in sending the suit against the Dexter Sulphite Pulp and Paper Company to Judge Leonard C. Crouch, of Syracuse, official referee. This means that the hearing which had been fixed for July 18 before Judge Kingsley will probably go over to a later date. It is expected that Judge Crouch will hold the hearing in this city inasmuch as most of the persons interested in the case are located in this section. The suit brought by Mrs. Florence E. Campbell and Mrs. Alice M. Campbell, of Watertown, to recover stock holdings of their deceased husbands and control of the company as well as payment to them of alleged profits during management by creditors, was started some time ago.

Aloyco Issues New Catalogue

The new catalogue of the Alloy Steel Products Company, Linden, N. J., gives a complete list of standard alloys in which Aloyco valves and fittings may be obtained. Each type of valve and fitting is illustrated, both in cross section and exterior views with descriptive information, as well as dimensions.

Aloyco valves and fittings are used successfully in a wide range of severe applications in sulphite mills, oil refineries, bleacheries, dye houses, and mines, as well as in chemical, rayon, nitrocellulose, ammonia oxidation, and prepared food plants.

This new catalogue which may be obtained on request illustrates, it is said, the most complete and varied line of valves, fittings, and piping materials of stainless steel alloys which are available from any single source in the country.

Fine Paper Merchants Meet in Boston

BOSTON, Mass., July 11, 1938—A well attended meeting of the fine paper merchants of Greater Boston was held at the Boston Chamber of Commerce Friday, with Chairman John H. Brewer presiding. There was a discussion of what the possibilities are under the new law enlarging the powers of the Federal Trade Commission. Current market conditions were also discussed.

FINEST CLAYS

PAPER MAKERS IMPORTING CO. INC. EASTON, PENNSYLVANIA, U.S.A. PMI INC

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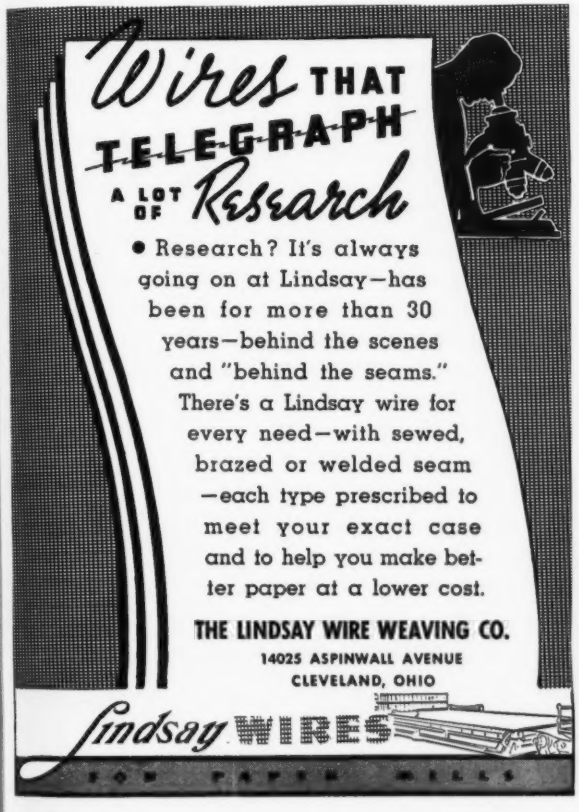
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• Research? It's always going on at Lindsay—has been for more than 30 years—behind the scenes and "behind the seams." There's a Lindsay wire for every need—with sewed, brazed or welded seam—each type prescribed to meet your exact case and to help you make better paper at a lower cost.
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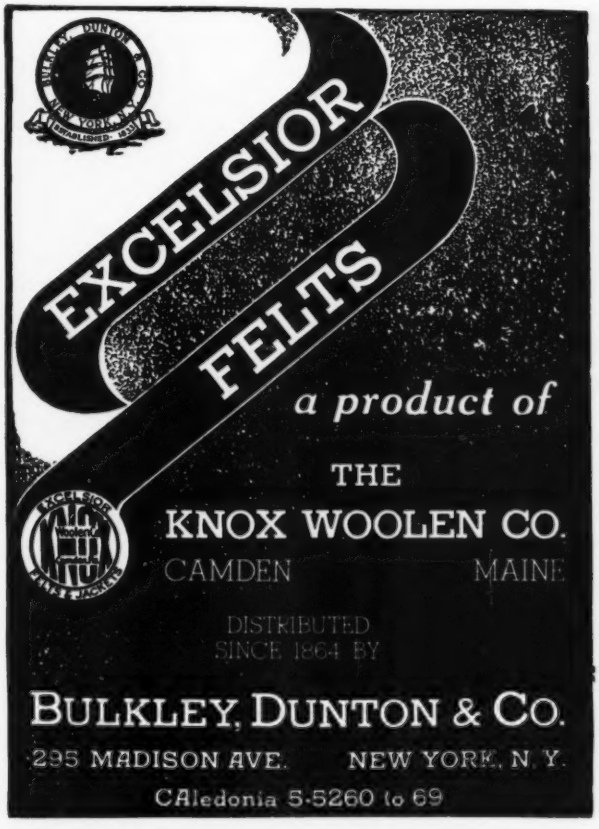
Lindsay WIRES
FOR PAPER MILLS



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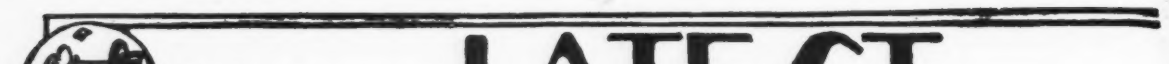
STATION A CINCINNATI, OHIO



New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, July 13, 1938.

The wholesale paper market reports that the improvement which began some two weeks ago continues. Demand in some grades of paper has improved for the current week, while little change is reported in other grades. Although sales volume is at a relatively low level for many grades of paper, in general, both production and distribution are keeping up well. The consensus of opinion appears to be that current business is more active than is usual at this time of the year. If the present improvement continues, a marked uptrend in demand should occur some weeks earlier than in past years. A considerable part of the trade believes that the upturn has now come and that the steady improvement will continue.

The recent reduction in the average representative quoted market prices on book, bond and ledger papers has not been approved by many in the industry on account of the present high costs of production. On the other hand, the majority opinion apparently considers the readjustment of prices which has been made was justified by conditions which have prevailed for some time. In general, prices continue firm and only one major change in market quotations has been reported for this week.

The demand for newsprint continues relatively good. Shipments are moving well under contract orders and prices remain firm and unchanged at prevailing quotations.

The demand for some grades of sulphite bond papers is reported as moderately good. Although little change in demand has occurred in tissue papers, a better feeling is reported to exist in that branch of the industry and an improvement in conditions is expected to continue.

The kraft paper market reports continued improvement. There is considerably less price cutting in kraft bag paper than for several weeks past and this improvement has had a stabilizing influence on the standard wrapping grade or southern kraft.

The box board market reports conditions as improved for the current week. In past years the uptrend in demand has usually occurred about August 1st, and continued improvement is the expectation in this division of the industry. Prices remain relatively firm at prevailing quotations, with the exception of kraft liner. This item has been a highly competitive grade in the past few weeks. The current average quoted market prices of representative distributors range from $45 to $50 per ton, with considerable price cutting prevalent.

Chemical Pulp

More inquiries for chemical pulp and more business has been reported for this week than for some time past. The trend in this market is believed by many in the trade to have definitely turned upward. No change from the average quoted market prices on any standard grades of chemical pulps are reported this week and prices conform to prevailing quotations.

Mechanical Pulp

The demand for mechanical pulp continues relatively light. Quotations on all standard grades of domestic and imported pulps are unchanged.

Old Rope and Bagging

Little business is reported in old rope. The only change for the week is the lower quotations on domestic manila rope, the price range of which is lower and some 25 cents per cwt. under the practically nominal price of foreign manila.

Rags

No change in demand or prices are reported on any grade of new and old domestic rags for the current week. The foreign rag market is inactive and prices continue nominal.

Waste Paper

Business in the waste paper market continues light. The prices of all grades are relatively firm and no change from prevailing market quotations are reported.

Twine

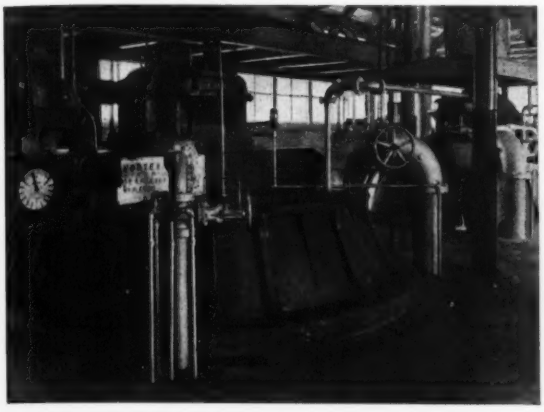
Business in the twine market is reported as relatively light. Prices are fairly firm and conform to prevailing quotations.

J. W. Snyder Returns from Europe

J. W. Snyder of Binney & Smith Company, Research & Development Department, left New York on the *Brittanic* on May 14 and arrived in London on May 21. The first week was spent at the Rubber Technology Conference, where a joint paper of W. B. Wiegand of Columbian Carbon Company and J. W. Snyder was read. Two weeks following the conference was spent in making calls to the paint and ink industries throughout England. Short visits were also made to Scotland and Ireland.

Upon leaving England Mr. Snyder spent a short time in Belgium, Holland and in Scandinavia. Business calls were made in Copenhagen and Stockholm. Following a two-day visit in Germany, a detour through Switzerland brought Mr. Snyder to Paris. After a week in Paris he sailed from Cherbourg aboard steamer *Bremen* and arrived in New York on June 30.

THE APPLETON VORTEX BEATER is speeding output and cutting costs in many paper mills. In this modern beater are combined all of the features that promote efficient operation. Many advantages contribute to greatly reducing the time of each beating cycle. With the Appleton Vortex Beater, stock is prepared in less time, with much less power, in greater volume, at higher consistencies, in less space and at lower cost.



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PRICE & PIERCE, Ltd.,

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Pulp and Paper Mill Screens
Of Stainless Steel—Copper—Bronze—Monel—Chemical Resisting Alloys
Perforations that are accurate in size

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KALAMAZOO TANK & SILO COMPANY
KALAMAZOO, MICHIGAN

1/16 — 1/8 — 1/4 — 1/3 — BBL.

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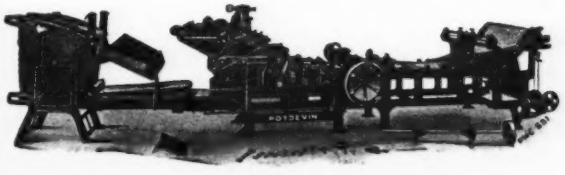

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SATCHEL BOTTOM BAG MACHINE

Makes cement, lime, flour, etc., sacks, single to 6-wall . . . equipped with hole punching and scoring arrangement for shopping bags.

POTDEVIN multi-size aniline or oil-ink web press may be combined for 1 to 8 color printing.

Other POTDEVIN machines cover range from small cellophane up to large rock-wool sacks.

POTDEVIN MACHINE CO.
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Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, July 13, 1938.

BLANC FIXE—The demand for blanc fixe continues at a moderate level. Prices are unchanged and conform to prevailing quotations. The pulp is quoted at from $42.50 to $45 per ton, in bulk; the powder is offered at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER—Quotations on bleaching powder continue unchanged at prevailing prices. Bleaching powder is quoted at from $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN—The demand for casein is reported as moderate for the week. Domestic ground casein is quoted at from 8 to 8½ cents per pound; domestic finely ground at from 8½ to 9 cents per pound. All prices in bags, car lot quantities.

CAUSTIC SODA—Quotations on caustic soda continue unchanged and conform to prevailing prices. Solid caustic soda is quoted at from $2.10 to $2.30 per 100 pounds; flake and ground at from $2.50 to $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Quotations on china clay continue unchanged at prevailing prices. Imported clay is quoted at from $14.50 to $25 per ton, ship side. Domestic filler clay is quoted at from $6.50 to $12 per ton; coating clay at from $11 to $22 per ton, at mines.

CHLORINE—Quotations on chlorine are unchanged and conform to prevailing prices. Chlorine is quoted at $2.15 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The demand for rosin is reported as fair. Prices are higher for the week. "G" gum rosin is quoted at $4.80; "FF" wood rosin at $4.40 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent gum rosin size is offered at $2.69 per 100 pounds, f.o.b., shipping point.

SALT CAKE—The demand for salt cake continues at a moderate level. Quotations range at from $12 to $13.50 per ton; chrome salt cake at from $11 to $12 per ton, f.o.b., shipping point. Imported salt cake is offered at from $14.50 to $15 per ton, Gulf or Atlantic Seaboard, on dock.

SODA ASH—Quotations on soda ash remain unchanged and conform to prevailing prices. Quotation on soda ash in car lots, at works, per 100 pounds, are as follows: in bulk, $.90; in bags, $1.05; and in barrels, $1.35.

STARCH—The corn starch market is reported as relatively firm. Prices are unchanged for the current week. Globe pearl is quoted at $2.60 per 100 pounds, in bags, and at $2.85 in barrels. Special paper starch is quoted at $2.70 per 100 pounds, in bags, and at $2.95 in barrels; all prices in car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina continue unchanged and conform to prevailing prices. The commercial grades are quoted at $1.15 per 100 pounds; iron free at $1.30 per 100 pounds, in barrels, car lot quantities, f.o.b., works.

SULPHUR—Quotations on sulphur are unchanged at prevailing prices. Annual contracts are quoted at $18 per long ton, f.o.b., cars at mines. Spot and nearby car lots are quoted at $21 per ton.

TALC—Quotations on talc continue to conform to prevailing prices. Domestic talc is quoted at from $15 to $18 per ton, Eastern mines. Imported talc is quoted at from $25 to $40 per ton, on dock.

Market Quotations

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	@	—
Kraft—per cwt.—Delivered Zone A			
No. 1 Northern	$5.25	@	—
Superstandard	4.12½	@	5.00
Northern Standard Wrapping	4.50	@	—
Standard Wrapping	4.00	@	—
Tissues—Per Ream—Carlots			
White No. 1	.92½	@	—
White No. 1 M. G.	.90	@	—
White No. 1½	.67½	@	—
White No. 2	.60	@	—
Anti-Tarnish M. G.	.75	@	—
Colored	.87½	@	—
Kraft	.75	@	—
Manila	.60	@	—
Unbl. Toilet, 1 M.	3.20	@	—
Bleached Toilet	5.26	@	—
Paper Towels—			
Unbleached	1.80	@	—
Bleached	2.10	@	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	$8.25	@	$9.75
No. 2 Jute	7.50	@	9.00
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Boards, per ton—			
News	$27.50	@	$30.00
Chip	27.50	@	30.00
Sgl. Mla. Ll. Chip.	42.50	@	—
Jute Lined Chip	45.00	@	—
White Pat. Coated	55.00	@	57.50
Kraft Liners	45.00	@	50.00
Binders Boards	71.00	@	77.00

The following are representative of distributors' resale prices:—

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$39.10@$46.00	$40.25@$47.25
100% Rag	31.05@ 36.50	32.20@ 37.75
85% Rag		29.90@ 35.00
75% Rag	23.60@ 27.75	24.75@ 29.00
65% Rag		21.65@ 26.25
50% Rag	17.55@ 21.50	18.70@ 22.75
25% Rag	14.65@ 17.75	15.80@ 19.25

Colors at $1.00 cwt. extra

Sulphite Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$8.80@$10.75	$9.95@$12.00
No. 2	7.90@ 9.50	9.05@ 11.00
No. 4	7.00@ 8.50	8.20@ 10.00

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper, Delivered in Zone 1:

No. 1 Glossy Coated	$10.80	@ $12.25
No. 2 Glossy Coated	9.25	@ 10.50
No. 3 Glossy Coated	8.15	@ 9.25
No. 4 Glossy Coated	7.65	@ 8.75
No. 1 Antique (watermarked)	7.65	@ 8.75
No. 2 Offset	7.00	@ 8.00
A Grade E. F.	6.80	@ 7.75
A Grade S. & S. C.	7.05	@ 8.00
B Grade E. F.	6.25	@ 7.25
B Grade S. & S. C.	6.50	@ 7.50
C Grade E. F.	6.00	@ 7.00
C Grade S. & S. C.	6.25	@ 7.25
D Grade E. F.	5.70	@ 6.75
D Grade S. & S. C.	5.95	@ 7.00

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	27.00	@	30.00
Dry	27.00	@	30.00

(Delivered)

No. 1 Domestic and Canadian	29.00	@	33.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	2.50	@	3.00
Prime Qualities—			
Easy-Bleaching Sulphite	2.25	@	2.50
Strong Unbleached Sulphite	2.00	@	2.25

(On Dock, Atlantic Ports)

Kraft Bleached	2.75	@	3.00
Kraft Light & Strong	2.00	@	2.25
Kraft No. 1	1.85	@	2.15
Kraft No. 2	1.75	@	1.90

(F.o.b. Pulp Mill)

Kraft Domestic	1.75	@	2.25

(Delivered)

Soda Bleached	2.70	@	—

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1.	6.25	@	6.50
Silesias No. 1	4.00	@	4.25
New Unbleached	6.25	@	6.50
Blue Overall	4.50	@	4.75
Fancy	2.10	@	2.25
Washables	1.60	@	1.70
Mixed Khaki Cuttings	3.25	@	3.75
O. D. Khaki Cuttings	4.00	@	4.25

Old Rags

White, No. 1—			
Repacked	3.15	@	3.40
Miscellaneous	2.60	@	2.75
White, No. 2—			
Repacked	2.10	@	2.35
Miscellaneous	1.70	@	1.80
Thirds and Blues—			
Repacked	1.40	@	1.50
Miscellaneous	1.25	@	1.30
Roofing Rags—			
No. 1	1.00	@	1.15
No. 2	.75	@	.80
No. 3 (bagging)	.65	@	.70
No. 4	.65	@	.70
No. 5A	.65	@	.70

Foreign Rags

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	@	2.20
New Light Silesias	5.50	@	5.75
Light Flannelettes	5.50	@	5.75
New White Cuttings	7.00	@	7.50
New Light Oxford	4.00	@	4.50
New Light Prints	3.00	@	3.25

Old Rags

No. 1 White Linens	7.50	@	8.50
No. 2 White Linens	6.50	@	7.50
No. 3 White Linens	4.50	@	—

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Lagerloef Trading Co., Inc.

52 Vanderbilt Ave. New York City

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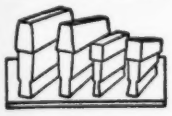
OF ALL DESCRIPTIONS, BLANK OR FINISHED

From Thoroughly Seasoned New Hampshire Rock Maple



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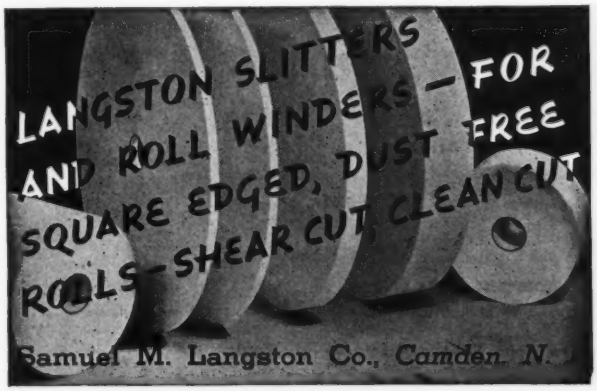
THOMPSON MANUFACTURING CO.

Lancaster, - New Hampshire



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COLUMBIA, MISS.

THE TRADE-MARK OF GOOD FELTS

The Waterbury Felt Co.

SKANEATELES FALLS, N. Y.

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APPLETON WIRE WORKS, INC. APPLETON, WISCONSIN

INTERNATIONAL WIRE WORKS

Fourdrinier Wires

MENASHA, WISCONSIN

No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	@	4.75
No. 2 White Cotton.	3.25	@	3.75
No. 3 White Cotton.	2.50	@	3.00
No. 4 White Cotton.	1.90	@	2.20
Extra Light Prints..	2.00	@	2.40
Ord. Light Prints...	1.75	@	2.15
Med. Light Prints...	1.55	@	1.95
Dutch Blue Cottons..	2.25	@	2.50
French Blue Linens..	3.00	@	—
Checks and Blues...	2.00	@	—
Linsey Garments....	1.90	@	2.00
Dark Cottons.....	1.50	@	1.60
Old Shopperies.....	1.30	@	1.45
New Shopperies.....	1.45	@	1.50
French Blues.....	2.25	@	2.50

Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	2.30	@	2.40
Domestic	2.25	@	2.35
Wool Tares, white...	1.50	@	1.75
Wool Tares, heavy...	1.55	@	1.80
Bright Bagging.....	1.45	@	1.50
Manila Rope—			
Foreign	2.50	@	2.75
Domestic	2.25	@	2.50
Jute Threads.....	2.75	@	3.00
Sisal Strings.....	1.40	@	1.50
Mixed Strings.....	.60	@	.70

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.50	@	2.60
Ordinary Hard White No. 1....	1.90	@	2.00
Soft White No. 1..	1.75	@	1.80
Soft White Extra..	2.25	@	2.40
Flat Stock—			
Stitchless	.65	@	.70
Overissue Mag.....	.55	@	.60
Solid Flat Book....	.45	@	.50
Crumbled No. 1....	.35	@	.40
Ledger Stock White.	1.00	@	1.10
Ledger Stock Colored	.55	@	.65
New B. B. Chips....	.15	@	.20
Manila—			
New Env. Cut.....	1.40	@	1.50
New Cuttings.....	1.25	@	1.35
Old Kraft Manila— Compressed bales..	.50	@	.60
News—			
No. 1 White News	1.15	@	1.35
Strictly Overissue..	.40	@	.45
Strictly Folded....	.20	@	.30
No. 1 Mixed Paper..	.05	@	.10

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.11	@	.13
White Hemp.....	.12	@	.14
Fine Polished—			
Fine India.....	.15	@	.17
Unpolished—			
Box	.08½	@	—
Paper Makers.....	.07½	@	.08½
Tube Rope.....	.09	@	.10
Wall Paper.....	.10	@	.11
Wrapping	.11	@	.13
Soft Fiber Rope....	.09½	@	.11½
Cotton	.15	@	.20

(Hard Fiber)

Medium Java.....	.09	@	.10
Mex. Sisal.....	.08½	@	.09½
Manila	.18	@	.25

Domestic	2.25	@	2.50
Sisal Rope.....	1.65	@	1.85
Mixed Rope.....	.50	@	.75
Transmission Rope...	1.60	@	1.85
Soft Jute Ropes.....	1.75	@	1.90
Jute Carpet Threads.	.90	@	1.25
Gunny Bagging—			
Foreign	2.30	@	2.35
Domestic	1.80	@	1.90
Bleachery Burlap....	3.00	@	3.50
Scrap Burlap—			
Foreign	1.50	@	1.60
Domestic	1.25	@	1.50
Scrap Sisal	1.25	@	1.50
Scrap Sisal for Shredding	1.75	@	1.90
Wool Tares, Heavy..	1.55	@	1.65
New Burlap Cuttings	1.75	@	2.00
Aust. Wool Pouches.	2.75	@	3.00
Heavy baling bagging	1.85	@	2.00
Paper Mill Bagging..	1.00	@	1.15
No. 2 Bagging.....	.60	@	.70

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints.	.03	@	.03¼
New White No. 1...	.06½	@	.06¾
New White No. 2.	.05	@	.05½
New Light Flannelettes	.04¼	@	.04¾
Silesias No. 1.....	.04¼	@	.04¾
New Black Silesias..	.03¾	@	.04
Silesias No. 1			
Soft Unbleached.....	.06½	@	.06¾
Blue Cheviots.....	.05	@	.05¼
Fancy	.03	@	.03¾
Washable	.02¾	@	.03

Cottons—According to grades—			
Blue Overalls.....	.04¼	@	.05
New Black, soft...	.03¾	@	.04
Khaki Cuttings....	.03¼	@	.03¾
O. D. Khaki.....	.04	@	.04½
Corduroy	.02¾	@	.03
New Canvas.....	.06¾	@	.07¼
B.V.D. Cuttings.....	—	@	.06½

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues.....	1.75	@	2.00
Third and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.63¾
Black Stockings.....	3.90	@	4.00
Roofing Stock—			
No. 1.....	1.00	@	1.10
No. 2.....	.75	@	.85
No. 3.....	.65	@	.70

Foreign Rags

(F. o. b. Boston)

Dark Cottons.....	1.00	@	1.05
Dutch Blues.....	2.65	@	2.75
New Checks and Blues	2.85	@	3.00
Old Fustians.....	2.25	@	2.50
Old Linsey garments.	1.75	@	1.90
New Silesias.....	6.00	@	6.50

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1.	.05½	@	.06
New White, No. 2.	.03½	@	.04
Light Silesias.....	.04	@	.04½
Silesias, No. 1....	—	@	.04½
Black Silesias, soft.	.03	@	.03½
New Unbleached..	—	@	.06
Washable, No. 1..	.01¾	@	.01½
Blue Overall.....	.04	@	.04½
Cottons—According to grades—			
Washable No. 2...	.01	@	.01¾
New Blue.....	.01	@	.01¾
Fancy Percales....	—	@	.02½
New Black Soft...	.03	@	.03½
New Light Seconds	—	@	.04½
New Dark Seconds	.50	@	.75
Khaki Cuttings—			
No. 1 O. D.....	.03½	@	.04
No. 2 Mixed.....	.02	@	.02½
Corduroy	—	@	.02
New Canvas.....	.05	@	.05½
New Black Mixed.	.02½	@	.02¾

Domestic Rags (Old)

White No. 1—			
Repacked	3.50	@	4.00
Miscellaneous	2.00	@	2.25
Twos and Blues—			
Miscellaneous	1.00	@	1.25
Repacked	1.50	@	1.75
Black Stockings (Export)	3.00	@	3.50
Roofing Stock—			
Foreign No. 1....	—	@	.75
Domestic No. 1...	—	@	1.00
Domestic No. 2...	—	@	.85
Roofing Bagging..	—	@	.70

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.50	@	1.75
Domestic	1.50	@	1.75
Manila Rope.....	3.00	@	3.25
Sisal Rope.....	—	@	1.50
Mixed Rope.....	.75	@	1.00
Scrap—			
No. 1.....	—	@	1.50
No. 2.....	1.00	@	1.25
Wool Tares, heavy..	3.25	@	3.50
Mixed Strings.....	1.00	@	1.10
No. 1 New Light Burlap	3.00	@	3.50
New Burlap Cuttings	1.75	@	2.00

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White.	2.15	@	2.20
No. 2 Hard White.	2.00	@	2.10
No. 1 Soft White..	1.80	@	1.90
No. 2 Soft White..	1.25	@	1.30
No. 1 Mixed.....	.70	@	.75
Solid Ledger Stock..	1.50	@	1.60
Ledger Stock, white.	1.00	@	1.50
Ledger Stock, colored	.75	@	.80
No. 1 Books, heavy..	.65	@	.70
Manila Cuttings.....	1.50	@	1.75
Print Manila.....	.30	@	.35
Container Manila....	—	@	.40
Kraft Paper.....	.75	@	.80
No. 1 Mixed Paper..	.15	@	.20
Straw Board Chip...	.25	@	.30
Binders Board Chip.	.25	@	.30
Corrugated Board...	.50	@	.55
Overissue News.....	.50	@	.55
Old Newspapers.....	.25	@	.30

BOSTON

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White.	2.25	@	2.40
No. 1 Soft White..	1.85	@	2.15
No. 2 Mixed.....	.75	@	.80
Solid Ledger Books..	1.50	@	1.75
Overissue Ledger Stock	1.30	@	1.50
Mixed Ledgers.....	.85	@	.90
No. 1 Books, heavy..	.65	@	.75
No. 1 Books, light...	.65	@	.75
Crumpled Stitchless Book Stock.....	.55	@	.65
Manila Env. Cuttings	1.60	@	1.70
Manila Envelope Cuttings, extra quality	2.10	@	2.20
No. 1 Old Manila...	.95	@	1.00
White Blank News..	1.30	@	1.40
No. 1 Kraft.....	.90	@	—
Mixed Papers.....	—	@	.10
Print Manila.....	.45	@	.50
Container Manilas...	.27½	@	—
Old Newspapers.....	.25	@	.32½
Paper Wool Strings..	.75	@	—
Overissue News.....	.45	@	.50
Box Board Chips....	.20	@	.25
Corrugated Boxes....	.27½	@	.30
Kraft corrugated boxes	.65	@	.70
Screening Wrappers..	.40	@	.45

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	2.40	@	2.50

CHICAGO

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings....	1.80	@	1.90
No. 1 Hard White.	1.70	@	1.80
No. 1 Soft White..	1.50	@	—
Ledger & Writings..	.75	@	.80
Solid Books.....	.55	@	—
Blanks	.90	@	—
Krafts	.60	@	—
New Kraft Cuts.....	1.10	@	—
Manila Env. Cuts...	Nominal		
Ex. No. 1 Manila...	Nominal		
Print Manila.....	Nominal		
Overissue News.....	.35	@	—
Old Newspapers—			
No. 1 Folded News	.30	@	—
No. 1 Mixed Paper	.20	@	—
Roofing Stocks—			
No. 1.....	2.00	@	2.10
No. 2.....	1.85	@	1.90

TORONTO

Paper

Bonds and Ledgers

Delivered

No. 1 White	.36½	@	—
No. 1 Tints	.37½	@	—
No. 2 White	.26½	@	—
No. 2 Tints	.27½	@	—
No. 4 White	—	@	.1550
No. 4 Tints 16.50		@	—
No. 5 Bond—White 11.85		@	—
No. 5 Bond—Tints .12.85		@	—
No. 5 Bond—Golden Rod 13.35		@	—
No. 5 Ledger—White .1185		@	—
No. 5 Ledger—Tints. .1285		@	—
No. 6 Bond—White .10.75		@	—
No. 6 Bond—Tints .11.25		@	—
No. 6 Bond—Golden Rod 12.75		@	—
No. 7 Bond—White . 9.10		@	—
No. 7 Bond—Tints . 9.60		@	—
No. 7 Bond—Golden Rod 11.10		@	—
Book—			
No. 1 M. F. 7.35		@	—
No. 2 M. F. 6.85		@	—
No. 3 M. F. 5.60		@	—
No. 1 S. C. 7.60		@	—
No. 2 S. C. 7.10		@	—
No. 3 S. C. 6.10		@	6.35
No. 1 Coated Book and Litho 12.50		@	—
No. 2 Coated Book and Litho 11.00		@	—
No. 3 Coated Book and Litho 10.00		@	—
Coated tinted.....13.50		@	—
Wrapping—delivered—			
Rag Brown..... 4.85		@	5.55
White Wrap..... 4.00		@	—
"B" Manila..... 4.90		@	6.25
No. 1 Manila..... 5.50		@	7.00
Fiber 5.50		@	—
Kraft No. 2..... 5.50		@	—

(F. o. b. Cars, Toronto)

News per ton—			
Rolls (contract)..$50.00		@	—
Sheets 69.50		@	—

Pulp

Ground wood.....27.00		@	—
Unbleached Sulphite..49.00		@	—
Book (Class 1).....59.00		@	—
Writing (Class 2)...57.00		@	—
Select (Class 3).....58.00		@	—
Kraft 48.00		@	—
Soda 54.00		@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut...	2.25	@	—
Soft White.....	2.15	@	—
White Blk. News..	1.25	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	.80	@	—
Light and Crumpled Book Stock.	.70	@	—
Ledgers and Writings	1.10	@	—
Manilas—			
New Manila Cut...	1.35	@	—
Printed Manilas...	.45	@	—
Kraft	.95	@	—
News and Scrap—			
Strictly Overissue.	.50	@	—
Strictly Folded....	.45	@	—
No. 1 Mixed Paper..	.30	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.06½	@	.06¾
Fancy Shirt Cuttings	.02¼	@	.02½